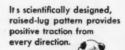
35 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

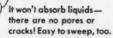
February 1952







Can be sheared, welded, punched, flame cut, shaped!



Wherever safe footing is important, American industry specifies



It comes in a wide variety of patterns and sizes!

Made of steel, it will stand up for years under tough abuse!

It's pattern is easy to match from any direction.

It's strong and will carry heavy loads

INLAND 4-WAY

SAFETY

PLATE

- on your products
- for maintenance and repair
- in new construction

Write for Bulletin F-1

INLAND

INLAND STEEL COMPANY. 38 South Dearborn Street, Chicago 3, Illinois

Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul

STOCKED BY LEADING STEEL WAREHOUSES

B.F. Goodrich



Why contractor chooses BFG tires for traction and long wear

TULLY AND DI NAPOLI, INC., of Corona, New York, is one of the largest general contractors in the New York area. They operate a fleet of 4 tractors, 4 low-bed trailers, 38 dump trucks, 9 scrapers, 17 automobiles and 14 station wagons, in addition to their 18 shovels, 16 truck cranes and other construction vehicles. The tires they use on these vehicles get extra punishment from sharp tocks and slag.

• Long a user of BFG tires, they are particularly well pleased with the all-nylon Rock Logger truck tires. Since the purchase of their first set of 8, they have found that these all-nylon tires

have 40% more mileage than similar tires without this nylon construction feature.

B. F. Goodrich tires were chosen by this firm because of their superior ability to withstand severe shocks and to resist cutting. They have this greater bruise resistance because they are built with the patented B. F. Goodrich nylon shock shield. Strong, elastic layers of nylon are built in between the tread rubber and the cord body. Under impact, these cords work together . . . absorbing and distributing the shock evenly. This special feature is found in all BFG tires of 8 or more plies at no additional cost. They have greater cut resistance

because of special tread compounds.

See your local B. F. Goodrich dealer. Let him show you how you can get better service and lower operating overhead for every kind of off-the-road operation. The B. F. Goodrich Company, Akron, Obio.





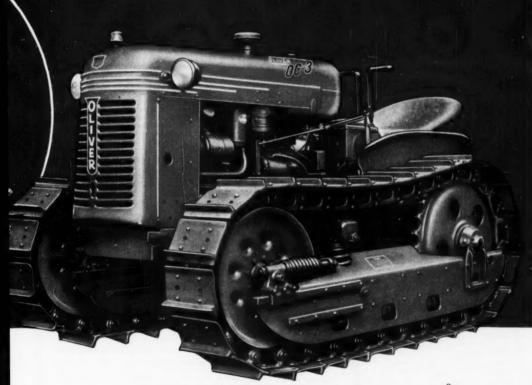
Here's the greatest little crawler tractor you've ever seen...the new Oliver Industrial "OC-3". It's ideally balanced for most effective loading and dozing...engine is mounted back so that front of tracks and radiator are practically in line. This better balance gives you 40% more lift with a front end loader... does a superior job of dozing and grading because blade is mounted close to the tracks for easier handling... precise control! And, operators find this bal-

anced tractor far easier to handle . . . far less fatiguing.

The new Oliver Industrial "OC-3" gives you a full 22 drawbar horsepower... plenty of power for jobs in its size. It's ruggedly built for the tough jobs... keeps maintenance costs down. Complete accessibility makes servicing easy.

For the complete story on the new Oliver Industrial "OC-3" and how it can help your operations, see your Oliver Industrial Distributor.

... far better DOZING



THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors









STRONGER-THAN-STEEL

FIBEROLAS crowns offer unlimited choice of vivid, permanent colors... with color molded all the way thru the safest crowns ever built. Shock-resisting ribbed design also available in aircraft grade aluminum.

Write for

SAVE MONEY ... save time! One size fits all heads . . . reduces inventories. Fully adjustable headband and hammock; can be changed in six seconds. Self-shaping and air. cushioned for comfort.



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NSTRUCTIO METHODS AND EQUIPMENT

Volume 34, Number 2 FEBRUARY 1952

Established 1919

Pay Dirt in This Issue

Crawler rigs handling rol ft of 6%-in. hole per hr	
	three-wire cables, 121/2-ton is stressed to span 60 ft
Tower Cranes Help Europe Build Builders across the sea are it of cranes that spot materia	ngenious in the development
Contractors Lick Job Delays With Fast communications reduce pared with investment in he	slack time; cost is low, com-
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Member ABC and ABP FEBRUARY 1952 Vol. 34 - No. 2

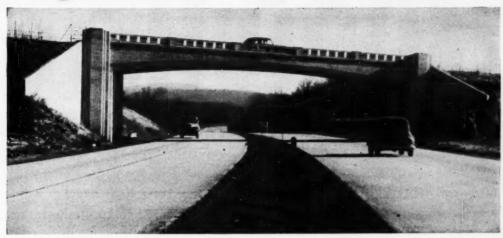
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High-Level Performance!



Lone Star Air-Entrained Concrete Used for Easier Placing and Extra Durability on Well-Designed Bridges for Nation's Greatest Turnpike

ONE OF MANY bridge structures on Eastern Extension of Pennsylvania Turnpike, concreted with Lone Star Air-Entraining Portiand Cement. Bridge, above, built by H. T. OSBURN CO., Franklin, Pa., under subcontract with H. J. WILLIAMS, INC., York, Pa., General Contractor.

Ever since its first use on public highways, in 1939, LONE STAR AIR-ENTRAINING PORTLAND CEMENT has played a steadily growing part, not only in paving many of the nation's principal highways and airports, but in concreting important structures of all kinds as well.

To the uniformly high chemical and physical quality characteristics for which all Lone Star Cements are noted, dependable air-entraining properties are assured by inter-grinding carefully controlled quantities of a tested air-entraining

agent at time of manufacture.

Field performance over the entire range of construction shows that Lone Star air-entrained concrete mixes have better workability and plasticity, are practically free from bleeding and segregation, and provide greatly increased durability.

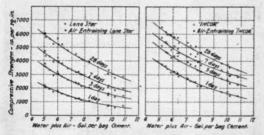


Fig. 2: (WATER + AIR) / GEMENT RATIO — STRENGTH RELATION
—from Lone Star Air-Entraining Cements booklet

Useful Information

Write for new, 36-page, illustrated booklet, summarizing field and laboratory experience with air-entrained concrete... with numerous tables and graphs, example at left. Practical information for designing new or adjusting established mixes, estimating materials, quantities tables, etc. For your copy of Lone Star Air-Entraining Cement Booklet—address Lone Star Cement Corporation, Room 1502 100 Park Avenue, New York 17, N. Y.



LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. - ALBANY, N. Y. - BETHLEHEM, PA. - BIRMINGHAM
BOSTON - CHICAGO - DALLAS - HOUSTON - INDIANAPOLIS
KANSAS CITY, MO. - NEW ORLEANS - NEW YORK - NORFOLK
PHILADELPHIA - RICHMOND - ST. LOUIS - WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

only Allis-Chalmers can offer you

1000 Hour

for truck wheels, idlers, support rollers



FULL PROTECTION — only One Greasing Every 1000 Hours — with Allis-Chalmers Exclusive Positive Seal, Roller Bearing Design!

Think of it! You can operate for 6 months on a 40-hour-week basis with just one lubrication of 14 to 20 of the most-abused, hardest-to-service points on a tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field design feature found only in the four new Allis-Chalmers tractors.

These Big Benefits Mean DOLLARS to you!

DAILY GREASING PERIODS ELIMINATED. You save at least 30 minutes every day... gain about one full month's production every year.

FULL PROTECTION ASSURED. Positive Seals keep grease in . . . dirt and moisture out. 1000-Hour Lubrication gives you protection unchallenged in the tractor field.

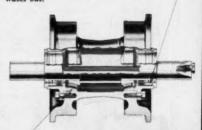
SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory
... need new grease only once every 1000 hours!

EASY TO SERVICE. No more cleaning of dirt, muck and grime from fittings every day.

Operator can choose time and place to regrease when conditions are favorable.

Here's the secret:

Positive Seels each have two spring-loaded steel rings — one stationary, the other turning with the wheel. Ground smooth as glass, they seal the grease in . . . keep dirt, grit, dust, mud and water out.



Topered Roller Bearings protect the Positive Seals by letting truck wheels, idlers and support rollers rotate freely...without side thrust or wobble. Reduced friction lets the tractor move easier, produce more drawbar power.

the newest finest tractor line on Earth!

DESIGNED FOR YOUR JOBS . BUILT TO TAKE IT . EASY TO OPERATE . EASY TO SERVICE

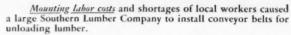
Lubrication



ALLIS-CHALMERS



Mining Men right
... "it takes a TOUGH
Conveyor Belt to haul
a tough load!!!"



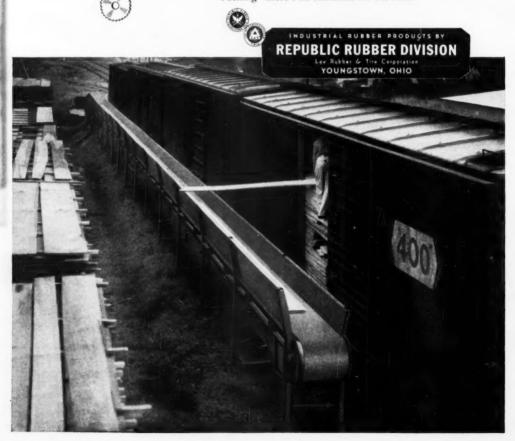
The idea worked fine. Several carloads could be unloaded simultaneously on the belts with minimum effort, handling costs were reduced and a confused traffic situation was eased.

<u>But</u>, ordinary conveyor belts couldn't stand the pace! Rough oak planks gouged off sections of belt covers and weather made deep inroads through the cuts, causing carcass deterioration and premature belt failures.

A local Republic Distributor, called in for advice, quickly solved the problem by recommending use of Republic Record Maker—a conveyor belt with tough rubber exterior and a rugged, mildew-resistant carcass . . . a belt widely used in coal and metal mining.

Today, 4 years later, the job's still going smoothly! Raw lumber rolls steadily into the mill on Record Maker Belting. There have been no work stoppages due to belt failures, and company officials claim the operation is now 4 times more efficient than it was when ordinary belts were used.

You'll achieve similar success with Industrial Rubber Products only if the products are properly applied to the job. Take advantage of Republic Rubber's free service offering to have a complete analysis made of your requirements. Write us today. Whether it's Conveyor Belting, Transmission Belting, Hose or Packing—there's no substitute for the best!





man.

TODAY'S job you know about—but, what are you going to hit tomorrow? Perhaps it will be easier digging but perhaps you'll hit rock you didn't expect. If you have a real Rock Shovel—a Northwest Rock Shovel—you are ready for any problem. It means real output in rock, and greater output in the easy digging. You are ready for any problem from a quarry job to ripping up pavement.

Northwests are built for the tough jobs. Cast Steel Bases and Cast Steel Machinery Side Frames give a foundation that stands the beating of tough "going." The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. The "Feather-Touch" Clutch Control makes handling the big ones easy. Uniform Pressure Swing Clutches give a smooth swing and reduce spotting delays. The Cushion Clutch reduces overloads on parts under power and Northwest Steering reduces maneuvering in changing location. These are real Rock Shovel advantages that mean money. A Good Shovel is Good in Any Digging!

NORTHWEST ENGINEERING CO. 1503 Field Bldg., 135 South LaSalle St., Chicago 3, Ill.

NORTHWEST

CRAWLED and TRUCK MOUNTED SHOVELS-CRANES-DRAGLINES-PULLSHOVELS

For teeth that really chew... two to six times longer



Today worn machinery and equipment mean more than replacement costs. Demands of the present industrial situation may require more priority than you're in a position to give.

Many foresighted construction men are hedging their worn equipment problem by insuring longer life for their present machines through the use of Airco Hardfacing Alloys . . . adding months to equipment life - and in many cases, improving the operating characteristics.

Bucket teeth are a good example. One firm found

hardfacing manganese bucket teeth added two to six months working life to these formerly 'expendable' items.

But this is only one Airco Hardfacing Alloy application you can use to save time, money, and equipment. Your nearest Airco Office will gladly show you how these cost-conscious Airco Alloys will help you with your particular problem. Write today.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND





AND OFFICES IN PRINCIPAL CITIES

AIR REDUCTION SALES COMPANY . AIR REDUCTION MAGNOLIA COMPANY . AIR REDUCTION PACIFIC COMPANY REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED

TRU-LAY
Preformed

WIRE ROPE

PERFORMS BETTER **HANDLES EASIER** SAFER TO USE LASTS LONGER

Available through Distributors ALL AROUND AMERICA

AMERICAN CHAIN & CABLE
AMERICAN CABLE DIVISION

In Business for Your Safety

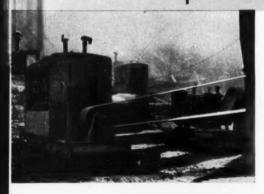
ALSO MAKERS OF THE COMPLETE LINE OF WIRE ROPE SLINGS



A "Cat" D17000 runs the mixer, a D8800 the dryer, and a D315 the dust collector in the asphalt plant. A D17000 drives the portable crusher that supplies the aggregate. A "Cat" D8 Tractor with No. 85 Bulldozer stockpiles and feeds material at the plant.

He called it luck

but quality manufacture started it



CATERPILLAR

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Long Periods of good performance in any power-producing machine depend on these major factors: Good design, good construction, good care and good dealer service.

The four "Caterpillar" Diesel Engines powering the Peter Kiewit Sons' Co. crusher and hot mix plant near Agoura, Calif., are proving they have all it takes to do a good job—while thousands of their mates are doing likewise all over the world. Many have run up records of 50, 60, 70 and over 100 thousand hours of operation—and they are still on the job. By proved field performance, the "Cat" Engines mentioned here are still young.

NOTE — Are you a "Caterpillar" owner? Remember: Good care is good preventive medicine. It takes only a few minutes to check starting, fuel, lubrication and cooling systems. It's no trouble having your "Caterpillar" Dealer inspect your equipment regularly. And when necessary, he can readily rebuild working parts before they become worn beyond repair. Good forethought is good business.

CATERPILLAR TRACTOR CO. . PEORIA, ILLINOIS



NEW! light, compact, D-C field

ENGINE-DRIVEN

WELDER

with A-C power take-off



THE MAINTENANCE



FARM AUXILIARY POWER



PIPELINE CONSTRUCTION

A UNIT WITH MANY APPLICATIONS!

The new Westinghouse Engine-Driven Welder was developed for construction and field-maintenance operations. It provides 200 amperes of d-c current for welding. It also provides 3,000-watt, 110-volt, a-c current for stand-by power. By simply plugging into convenient receptacles on the a-c power panel, the operator may obtain power for drills, grinders, pumps, lights and other electrical equipment.

The standard unit is skid mounted for truck transport or may be mounted on a high-speed, pneumatic-tired trailer. Ready for field service, the unit weighs only 1,150 pounds and measures 39½" high by 62½" long in the stationary model.

The standard model has hand-crank start. Battery start is also available.

A large toolbox for storing cables, helmets, electrodes, tools and other accessories is also included if desired.

FOR MORE INFORMATION

Write to the Westinghouse Electric Corporation, Welding Division, Buffalo, New York, or contact your nearest Westinghouse representative.

J-21611

welder PLUS stand-by power!



1 CONVENIENT A-C POWER TAKE-OFF

3 kw stand-by power can be obtained without using a bulky, auxiliary rotating machine. The operator simply plugs into one of the convenient 110-volt, a-c receptacles. This stand-by power is extremely beneficial when ordinary sources of power are not available.

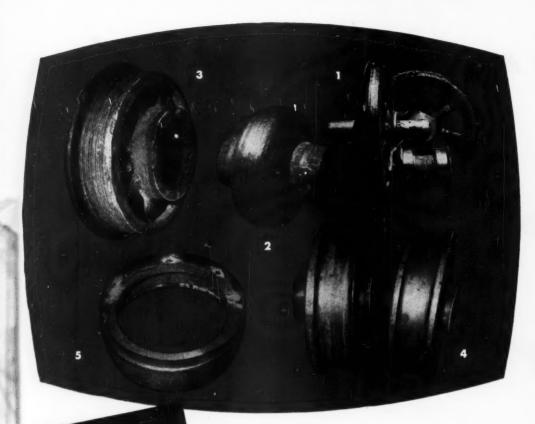
2 IMPROVED GENERATOR

Closely coupled to the driving engine, this new improved generator makes it easier to strike and maintain a steady welding arc. No exciter is required. Welding current ranges from 40 amperes at 20-load volts to 250 amperes at 40-load volts.

3 EFFICIENT, RELIABLE ENGINE

The new welder is equipped with a performance-proved,4-cylinder,liquid cooled, Ford industrial engine. It is rated 30 maximum and 25 continuous horsepower at 1,800 rpm. The engine is equipped with oil filter and oilbath air cleaner.





1. SHOVEL IDLERS
SURVEY DATE AND ADDRESS A

STOODY 105 keeps the wheels of industry turning...

with less wear-less down time-less cost

Everywhere you look—in almost any industry, you see wheels in use. Some work in earth, others operate metal against metal... but almost all are subject to heavy abrasion, loss of size, loss of life! The quick, sure way to reduce wear... to keep these wheels of industry rolling... to cut maintenance is to hard-face with STOODY 105! It's a time-tried, proven procedure that saves equipment and dollars and reduces the need for hard-to-get replacements.

See your Stoody Dealer — 600 in U. S. and Canada — for friendly help, or write direct.

STOODY COMPANY
11972 E. SLAUSON AVENUE, WHITTIER, CALIF.

STANDS WELD 5

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EUC"SCRAPERS

Haul More Yardage At Less Cost

The "Euc" Scraper has a struck capacity of 15.5 cu. yds., 21 yds. heaped...10 speed transmission...275 h.p. engine...top speed, loaded, 28.2 m.p.h.



Four wheel Euclid tractor provides easy, positive steering, excellent maneuverability, and has ample power, traction and flotation for fast loading and travel on steep grades and soft fills.

Owners in all parts of the country report that the Euclid Scraper with a heaped capacity of 21 cu. yds., has outperformed other scrapers of comparable size on a wide range of jobs. As one leading contractor puts it, "The 'Euc' outhauled other scrapers, had less down time, and maintenance costs were about 50 per cent less." After completing a rush airport job, one with a wide variety of soils, another contractor stated, "We're glad that our choice was Euclid over all other makes of rubber-tired scrapers."

Because of fast, easy loading, high travel speed, good traction and flotation and excellent maneuverability, Euclid Scrapers move more loads per hour at more profit per load. Have your nearest Euclid Distributor give you complete information and job proved performance data on this Euclid Scraper—get more production at less cost!

The EUCLID ROAD MACHINERY CO.

CLEVELAND 17, OHIO

CODE: BENTLEY





"TEXACO KEEPS EQUIPMENT ON SAVES US MONEY"

— says John L. Carrickhoff, superintendent, Nello L. Teer Company, Durham, N.C.

Nello L. Teer Company – like alert and progressive contractors everywhere – keeps a sharp eye on costs; knows that to keep them low, equipment must stay on the job and out of the shop. That's why, for example, it uses *Texaco Ursa Oil X*** in all heavy-duty gasoline and Diesel engines.

Texaco Ursa Oil X** is both detergent and dispersive. Thus, harmful carbon, sludge and gum just don't exist. Engines stay clean, rings free; valves seat properly. That means better compression and combustion — less fuel consumption. At the same time, maintenance costs are less because engine parts are fully protected against wear and corresion.

Other Texaco Money-Savers

For long-lasting chassis lubrication, use Texaco Marfak. It stays in the bearings, protects against wear and rust. More than 400 million pounds of Marfak bave been sold!

For wheel bearing protection that requires no seasonal change, use Texaco Marfak Heavy Duty. It seals itself in, seals out dirt and moisture.

For crawler track lubrication, use Texaco Track Roll Lubricant. It gives effective protection even under severe conditions.

Let a Texaco Lubrication Engineer tell you about the Texaco Simplified Lubrication Plan – how with only six lubricants you can handle every major lubrication requirement. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.



TEXACO

ALL OUR THE JOB,

John L. Carrickhoff, Superintendent, Nello L. Teer Company. Photo was taken on the job of constructing a 5-mile section of the Great Smoky Mountains Highway in East Tennessee. Nello L. Teer Company credits the on-schedule completion of this project largely to the trouble-free performance of its construction machinery. Shovels, tractors, air compressors, trucks and other equipment are lubricated and fueled with Texaco.

NELLO L. TEER CO.

Lubricants and Fuels



BUCYRUS ERIE 6-YARD

Brings NEW SPEED,

To Heavy Duty Excavating

ADDED to the time-proved superiorities of design and construction which have made Bucyrus-Erie quarry and mining shovels traditionally "years ahead" are important features new to an excavator of this size, yet thoroughly proved in the field. Among these 150-B features are:

Exclusive Two-Section Boom with tubular dipper handle free to rotate in saddle block. Used with outstanding success on Bucyrus-Erie's large stripping shovels for many years, this design speeds the working cycle and permits increasing the payload because it reduces front end weight materially—yet provides enormous strength. Upper boom section carries

only load resulting from pull of ropes, strong trussed lower section transmits directly to the revolving frame the vibrations, torsional and shock loads set up in digging. Rope crow is quiet, positive, with crowd machinery located on the deck.

Powerful New Main Machinery designed for double twin hoist, smoothly delivers power where you want it, when you want it. Houst machinery pulls dipper straight through banks with steady positive action. Fast stooth swing, with quick acceleration and destaration, shaves seconds off every cycle.

Larger Stronger Mounting has new propelling machinery arrangement, which provides rapid engagement of the propel for fast move uper Cored box-section tread links has separate wearing paths for rollers and driving tumblers. Cat belts have high wear resistance, stay in adjustment for long periods.



Case History No. 5011-27 GM DIESEL

USER: Thomasville Stone and Lime Company, Thomasville, Pennsylvania

INSTALLATION: 3-71 and 6-71 GM

Diesels power Joy Heavyweight

Champion blast hole drill; 3-71 for rotary and propulsion, 6-71 on

compressor and "pulldown."

PERFORMANCE: Replaced 5 small drills. Maximum footage with previous

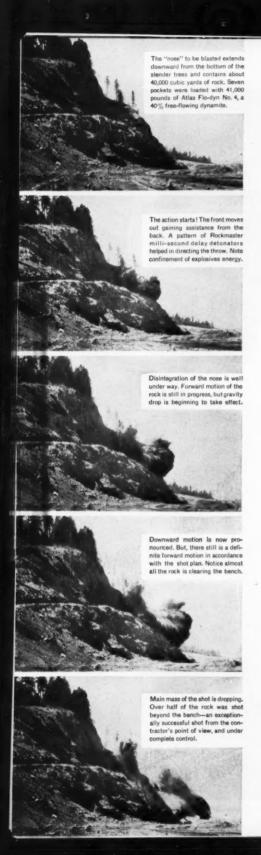
equipment 15 feet per drill in 6% hours; with new equipment 180 feet in 6% hours. Reduces drilling manpower.

Fuel consumption: less than 7 gallons

per hour (both engines).

This Diesel replaces five drills





ROCKMASTER' BLASTING Reduces Costly Shovel and 'dozer Work

Oregon contractor employs Atlas millisecond delay system to make rock jump bench and land on valley floor.

Shovel work on a rough bench can be mighty expensive. Every cubic yard of rock that could be blasted off the "nose" and onto the valley floor meant substantial savings for the contractor on this highway and railroad re-location job near Lookout Point Dam, Oregon.

Leonard & Slate Ltd. of Oregon and E. C. Hall Company tackled the job with the milli-second delay action of the Rockmaster Blasting System. The result: over half of the rock was thrown to the valley floor. And they could have kept the rock on the bench if they wanted it there—thanks to Rockmaster's remarkable control over throw.

See how ROCKMASTER control can be put to work for you. Send for the free 20-page ROCKMASTER book showing typical loading patterns for all principal types of controlled blasting.

ATLAS EXPLOSIVES (ATLAS "Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE
Offices in principal cities







PICTURE OF A MACHINE

replacing

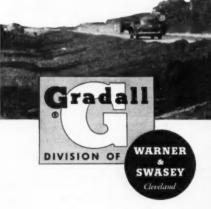
hand laborers

• Despite many modern technological developments, a certain amount of clean-up hand labor has remained a necessity in practically all construction work.

But now the Gradall, with its extreme versatility and exacting hydraulic tool control, eliminates much of this clean-up hand labor. Contracts are completed faster, costs are cut, and manpower conserved.

Reports from the field often show one Gradall replacing 40 men . . . and doing the job better, faster, for less.

Why not investigate all of the applications of this one versatile machine in your work? Your nearest Gradall Distributor will be glad to demonstrate its many profit possibilities with a field demonstration.



Gradall Distributors in over 60 principal cities in the United States and Canada

GRADALL-THE MULTI-PURPOSE CONSTRUCTION MACHINE with Controlled Down Pressure

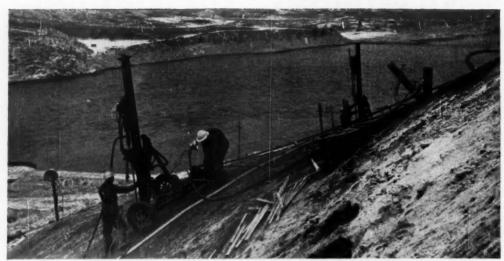
BUILD PROFITIME...CUT DOWNTIME-



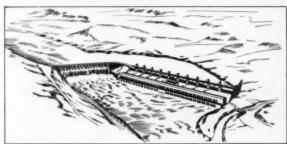
WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES, SPECIFY FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over NBC

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Wagon drills at work high above the north bank of the Columbia River. This impervious glacial till was blasted loose and used in sealing the right bank upstream from the axis of the dam. This contract was held by Peter Kiewit Sons Company.



The powerhouse at Chief Joseph Dam will ultimately house 27 generating units and will be more than 2,000 ft long, making it the longest powerhouse in the world. The project is under the direction of Corps of Engineers, U. S. Army, Seattle District.



This rock mound, under attack by a battery of busy wagon drills using Bethlehem Hollow Drill Steel, was cleared away for the intake channel to the powerhouse. General Construction Company of Seattle held bis contract.

Chief Joseph Dam on Columbia River to be Second Largest Power Producer

Chief Joseph Dam will be the second largest hydroelectric power plant in the world, having an ultimate generating capacity of 1,728,000 kw. Now under construction on the Columbia River in Washington, this concrete, gravity-type structure will back up a reservoir reaching 51 miles upstream to the tailrace of Grand Coulee Dam.

The dam, named for the Nez Perce chieftain of 19th Century fame, is scheduled to begin operation in 1955. It is to be 2,260 ft long and 220 ft high. Construction will require the excavation of about 5,500,000 cu yd of rock.

That's a lot of rock, and it calls for good drill steel, steel that can be depended on to keep the drilling on schedule. Right now there is more than 100 tons of Bethlehem Hollow Drill Steel at work at the site of this big dam.

Chief Joseph Dam is the latest addition to the long list of notable jobs on which this "old reliable" of drill steels is playing a big part.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Expert Distributor: Bethlehem Steel Export Corporation



BETHLEHEM HOLLOW DRILL STEEL





TOYPICAL OF LEADING FIRMS which have used Davey Compressors for many years is Ray D. Baker Contractor, Inc., Detroit.

This company purchased its first Davey in 1934 and has since bought 21 Daveys. Today, Ray D. Baker Contractor, Inc., owns 18 Davey Compressors. 4 of these are Model 210 trailers. 2 are Model 160 trailers and 2 are Model 105 trailers. In addition, this outstanding contractor employs 7 Davey Auto-Airs (truck-mounted compressors driven directly from truck engines through Davey Heavy Duty Power Take-offs) and a stationary industrial Davey.



Davey Madel 160 at Auburn and Adams Roads, Detroit

Another Davey on Consumers Power Co. job, Reyal Oak, Michigan.

DAVEY

pioneers of

DAVEY COMPRESSOR CO. . KENT, OHIO

PIONEERS of the Motor Truck Industry

This "old timer" was one of the first motor vehicles manufactured for commercial delivery purposes. It was built in 1900. If you are not sure of the name of this old truck — write to us.



PERFECTION Pioneer Builder of BODIES and HOISTS

In the early days of the motor truck industry, body problems were probably the least of the manufacturer's worries. However, motorized transportation soon became so universal that the large variety of body and hoist needs created a new and separate industry to better handle the many haulage problems.

Thirty-four years ago PERFECTION was one of the pioneers in this new industry. They built and served so well that they quickly earned a place of leadership. This experience can be a valuable help in solving your body and hoist problems.

Write for literature today.

The photo at the left is an example of PERFECTION Bodies and Hoists to fill today's medium and heavy duty demands. This unit is a heavy duty style 354 Dump Body 144" x 84", with full cab guard; capacity 10 cu. yds. Hoist is a model 827 Iso-Draulic ROLL-A-LIFT.



FOR ANY TRUCK STANDARD OF SPECIAL UNITS IN ALL SIZES - FOR ANY USE

THE PERFECTION STEEL BODY COMPANY

Galion, Ohio, U.S.A.



From January to October 1951, MORETRENCH WELLPOINT EQUIP-MENT has been pumping steadily, keeping various foundations dry on this vast expansion project in the mid-west.

Ten feet of water in sand, hardpan and rock — limited working space — a tight construction schedule — made efficient pumping on this job imperative.

Plan to progress rapidly on wet work when you pump with Moretrench. It's a time and money saver on every job. With this in mind, the general contractor turned the dewatering over to experts. Twenty-four hours after pumping started, they were excavating in the dry.

MORETRENCH CORPORATION

190 West St.

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Koehring 34-E twinbatch Paver

can hit a top output of 86.7 batches an hour, on 60-second mixing time. This reserve production capacity can be used to pick up lost time from normal production delays . . . assures 50 batches an hour, 8 hours a day, at no increase in batching, hauling and finishing equipment. Limited-production, single drum paver theoretically mixes up to 50 batches an hour, but usually averages only about 45 batches. Under identical job conditions, and with same auxiliary equipment, Koehring 34-E twinbatch gains 5 extra batches an hour . . . 40 extra batches daily. Yet, it requires only approximately 3 extra batches a day to offset the slight additional cost of the 34-E twinbatch

Paver. That leaves a net gain of 37 extra batches daily to help maintain schedules, handle more jobs per season, and earn more profits per job. There's no extra paver operating expense, service or maintenance, because the 34-E twinbalch is as simple as a single drum machine. Basic units are the same, except for double compartment drum . . . and, with split-second Autocycle control, every mixing operation is automatic, accurate and fast.

See for yourself why you will be miles ahead on your highway, airport and other big production paving contracts with a Koehring 34-E twinbatch Paver. Get complete information from your Koehring distributor, or write for new 18-page catalog.

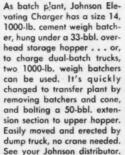
KOEHRING COMPANY, Milwaukee 16, Wis.



twinbatch



Roomy, flow-line skip is 120" wide for charging with dual-tired batch trucks . . . big throat discharges almost full batch during 8-second skip hoist. Special A-frame elevates beem 30°, discharges bucket $15\,V_2$ ' high.



C. S. JOHNSON (Koehring Subsidiary)
Champaign, Illinois



With 30 digging feeds, 3 bucket line and conveyor belt speeds all fully reversible, plus 3 travel speeds, this Parsons 250 Trenchliner is extremely flexible . . . digs 16 to 42" wide, up to 12'-6" deep . . . cuts within 11" of either side. Power-shift, arc-type conveyor dumps right or left. Get complete facts on this general-purpose 250 Trenchliner, or 4 other heavy-duty sizes, from your Parsons distributor, or write us today.

PARSONS (Koehring Subsidiary) Newton, Iowa



sehring rubber-tired 16-E twinbatch has of elevated boom, discharges controlled arch at 21' height (higher with special com). Mixes, distributes up to 50 cm. yds.

For "timoly", precision-finishing with plonty of reserve speed. Keekeing Longitudinus Pinisher operates at almost twice the speed of a medern 34-E paver . . produces mechanically-accurate slabs 8 to 30 wide, uniform crawn transitism, 1-man operation.

Saving important seconds on every batch of concrete, tilted Flow-Line Discharge Chute pours full 12.1 cu. ft. batch in 7 seconds. Kwik-Mix 11-S Dandie® also has side or end discharge, 2 or 4 wheels, and special tower attachment. Other sizes: 3½-S to 16-S. Also check Kwik-Mix bituminous, tilt and non-tilt plastermortar mixers . . . and Moto-Bug® (power wheelbarrow) shown here. Ask your Kwik-Mix distributor for all facts.

KWIK-MIX (Koehring Subsidiary) Port Washington, Wis.



X68

Where the SEAMAN PULVI-MIXER Fits in Airport Construction!



efficiently and at a greater saving in costs. Unparalleled in daily output of completely mixed materials the SEAMAN successfully challenges the most extensive projects; low in investment, it is profitable on the smallest jobs. Plan on a

SEAMAN MOTORS, Inc.

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SEAMAN in your 1952 operations.

MILWAUKEE 3, WIS.

The TRAV-L-PLANT Model of the SEAMAN PULVI-MIXER.

Equipped with pump, spray bar and full tachometer assemblies for application of bitumen or water.

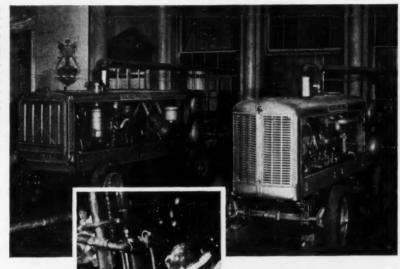
Volumetric meter optional.
7 ft. mixing width. Gasoline or diesel powered.

Send for this FREE book on up-to-the-minute practices in mixing for all types of stabilized construction. Write for Bulletin 25.

FROM COAST TO COAST

on all types of jobs

The dining room of a famous hostelry may seem an odd place for compressors, but all air for the demolition work in the year-long job of razing the former Ritz-Carlton Hotel, of New York, was supplied by these two CP Dieseldriven PORTABLE COMPRESSORS, of 600 cfm and 315 cfm capacity.





CP reversible PNEUMATIC ROTARY WOOD BORERS are great time-savers on this coffer dam job. Furnished in 1", 2" and 4" sizes.



For fast drilling under any conditions, at any angle, the G-300 WAGON DRILL handles the heavier drifters, 4-inch cylinder bore – even in a northern blizzard.



Wherever concrete is being compacted— Hungry Horse Dam, in this instance just the right vibrator for the job can be selected from the seven different models of CP PNEUMATIC and ELECTRIC VI-BRATORS.

Write for detailed information



PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

ets Fastening Speeds all these jobs — 1. Fastening wood sleepers to concrete floor slab. H's fast, easy and 2. Hanging steel sash and door bucks to concrete and brick. safe to operate 3. Anchoring stadium, theatre and church seats to concrete or brick. The Remington 4. Fastening wood furring strips to concrete for attachment of metal lath. 5. Anchoring wood plates to concrete floors and ceilings for setting partitions.

Stud Driver



Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and class.



Then press loaded Stud Driver firmly against surface, depress safety lever, and pull



Explosive charge imbads stud solidly. Open Stud Driver with a twist of the wrist, eject empty shell, load next stud. Whole job takes seconds! 6. Hanging radiator housings to concrete or brick.

RIGHT STUD FOR EVERY JOB

Studs are available in different types to meet the requirements of any specific fastening job. Made of a special, hardened steel alloy, these studs were developed by Remington after exhaustive testing for hardness, strength and profile. Pull-Out resistance is as high as two tons, depending on stud used.

Five different power loads are clearly indicated by colored plastic heel caps. These tough heel caps permit instant assembly of any cartridge with any Remington stud. Easily removed from the stud after driving, the heel cap also protects the thread of the driven stud.



INTERNAL THREAD

EXTERNAL THREAD

Studs up to 100 Times Faster than Conventional Methods ...and Does it Safely!

NEW CARTRIDGE-POWERED MODEL 450

REMINGTON STUD DRIVER

LOOK AT ALL THESE FEATURES

COMPACT AND PORTABLE—Weighs only 51/2 pounds, ideal for scaffold, ladder, overhead work, inaccessible places. Comfortable to use in any position.

SPEED — One man can set up to 5 studs per minute, as much as 100 times faster than other methods. Sets studs at whatever depth is required up to 23/4 inches. depending on material.

ELIMINATES INVESTMENT in outside power - Self-powered. Especially useful in isolated places.

FOUR WAYS SAFE-Plainly visible red dot indicator shows when it's cocked; safety lever must be depressed before and during squeezing of main trigger; permanently attached safety shield must be compressed against work before Stud Driver will operate. Stud Driver will not operate if tilted at more than a slight angle. Slight recoil. Low noise level.

RUGGED-All working parts of the Stud Driver are made of heat-treated alloy steels, housing of strong, lightweight aluminum that carries no operating stress. Lining of safety shield is a solid block of tough, resilient Du Pont neoprene.

PRICE for Model 450 Remington Stud Driver complete in rugged steel carrying case—only \$119.50.

Revolutionary tool fastens steel or wood to concrete or steel in seconds!

Speed construction fastening jobs and cut costs. with the amazing new Remington Stud Driver. This lightweight fastening tool easily sets as high as 5 studs per minute. Easy to operate, it needs no outside power source . . . needs no other equipment!

The Remington Stud Driver is compact, rugged and safe. With one lightning-fast operation, it firmly fastens steel or wood structural pieces and fittings to concrete or steel surfaces.

Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., America's oldest and foremost sporting arms manufacturer. To obtain detailed information on this time- and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.

"If It's Remington-It's Right!"



Industrial Sales Division 931 Barnum Ave., Bridgeport 2, Connecticut I am interested in obtaining descriptive literature on the Model 450 Remington Stud Driver. Firm.

Position

Remington Arms Company, Inc.

Get the solid facts! See how you save with

CHEVROLET

Advance-Design **TRUCKS**



PAY LESS AT THE START

Chevrolet trucks list for less than any other trucks built to handle the same payloads. Here is a real, money-in-the-bank savings on pur-chase price. And you'll find the Chevrolet brings you ruggedness, stamina and great truck features not found in many other trucks.

GET LOWER ON-THE-JOB COSTS

Chevrolet trucks give you Valve-in-Head economy that saves gas, four-way engine lubrication that reduces wear and saves oil, and tough, rugged construction for longer truck life. Like truck users everywhere, you'll find Chevrolet trucks cost less to own and maintain.

TRUCKS BUILT FOR YOUR PAYLOADS

Chevrolet trucks are factory-matched to meet your requirements. You get the right truck for the job . . . never "too much" or "too little" truck. Frame, axles, springs, body, brakes, and power form a balanced team.

BIGGER TRADE-IN VALUE

Records show that Chevrolet trucks traditionally bring more money at re-sale or trade-in than many other makes. Chevrolet's market value stays up because the value stays in. More reason to see your Chevrolet dealer for your best truck buy!



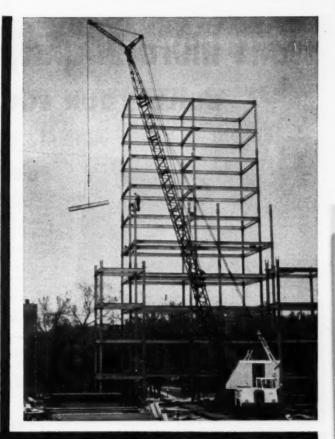
TWO GREAT VALVE-IN-HEAD ENGINES-the 105-h.p. Loadmaster or the 92-h.p. Thriftmaster—te give you greater power per gallon, lower cost per load • POWER-JET CARBU-RETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICU-LATED BRAKES—on medium-duty models . TWIN-ACTION REAR BRAKES-on heavyduty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavyduty models . CAB SEAT-with double-deck springs for complete riding comfort . VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING - for easier handling • UNIT-DESIGNED BODIES—for greater load rotection . ADVANCE-DESIGN STYLING-for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN





All lifts are easier with a BAY CITY CRANEMOBILE



CHECK THESE FEATURES

- √ 20-25 Ton Capacity
- √ Pin-Connected Boom
- √ Hi-Collapsible Gantry
- √ Independent Power Boom Hoist
- √ Precision Power Load Lowering
- √ Removable Counterweight
- √ Specially Designed Carrier
- √ High Road Speeds

Many contractors run into jobs they can't handle unless they buy new equipment. But those owning a BAY CITY CraneMobile have bought versatile, flexible performance to handle long booms for high reach or short booms for heavy lifts.

The BAY CITY CraneMobile is made in several sizes having crane ratings to 25 tons—will go right to the job at speeds up to 35 m.p.h. and is packed with mechanical refinements and operating advantages. Consider the boom hoist—independently operated—with power-up and power-down for precision erection. Then there is the power load-lowering device for handling heavy loads easily and of course the Hi-collapsible gantry which gives an overall height of 11'9" or less when travelling. Why not get complete information from your nearest BAY CITY dealer or write today for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN



BAY CITY



SHOVELS . CRANES . HOES . DRAGLINES . CLAMSHELLS

Want more output, less down

BUILD YOUR EQUIPMENT WITH



U.S.S COR-TEN

U.S.S Cos-Ten is a ductile, low-carbon chromium-nickel-silicon-copper-phosphorus steel having a yield point of 30,000 psi min., and a tensile strength of 70,000 psi min, in thicknesses ½° and under.

70,000 psi min. in thicknesses %" and under.

Its resistance to abrasion and shock is superior to
the structural carbon steel; its fatigue resistance—that
is, its ability to withstand repeated stresses—is 60%

what particularly distinguishes U.S.S Con-TEN is
What particularly distinguishes U.S.S Con-TEN is
unusually high resistance to atmospheric corrosion—4 to 8 times that of plain steel, 2 to 8 times that
of copper steel. This properly helps to assure the
long life and low maintenance cost of any equipment
in which Con-TEN is used, whether to obtain greater
durability or to reduce weight.
U.S.S. Con-TEN is produced in all stoutered exect.

urramity or to reduce weight.

1'S-S Con-Ten is produced in all standard products-plates, shapes, bars, sheets, strip, special cold
formed sections and wire. Recommended particular
for application in light and intermediate thicknesses.

"We prefer U.S.S COR-TEN," says Mr. Ross Castendyck of the Challenge Mfg. Co., Maywood, Cal., "because of its superior corrosion and co., may word, call, saw well as its high strength. These permit us to reduce our Mixer weight 10% to 15% and at the same time to build a 20% stronger unit that will stay in service at a lower maintenance cost.

U·S·S MAN-TEN

U.S.S Man-Ten is a grade of manganese-copper steel that, at relatively low cost, provides toughness, morkability and weldability in a higher degree than obtainable in carbon steel of the same strength level. Its atmospheric corresion resistance is slightly higher than that of copper steel.

than that of copper steel.

U.S.S Man-Ten, in thicknesses up to ½" inclusive, has a yield point of 50,000 ppi min, and tensile strength of 75,000 pai min. Its abrasion resistance is greater than that of structural carbon steel (ASTM A7); its resistance to sudden shock is about 20% greater; its fatigue strength is approximately 20% greater; its fatigue strength is approximately with higher, insuring greater ability to withstand vibration and reversal of stresses.



Page 38 - CONSTRUCTION Methods and Equipment - February 1952

time, low maintenance costs?

THESE U.S.S HIGH STRENGTH STEELS

and give it the STAMINA to stay on the job!

• When the defense effort really gets rolling, the construction industry will face the biggest job it has ever tackled. That's when your big-capacity, high-speed, high-powered equipment will pay off, BIG. But only if it is thoroughly dependable, only if it is rugged enough to stand up, day after day, under the hardest kind of service and regardless of weather or ground conditions.

That's why it is so important to minimize, as far as possible, structural failures that can put costly, hard-to-replace equipment out of business. That's why it is vitally necessary to make sure that your drag lines, shovels, crawlers, 'dozers, trucks, and other earth-moving equipment are built as strong, as tough and as durable as possible.

You can do it with U·S·S HIGH STRENGTH STEELS

With high-strength U·S·S COR-TEN, U·S·S MAN-TEN and U·S·S TRI-TEN, equipment breakdowns that hamper operations and run up costs can be greatly reduced. With these famous "steels that

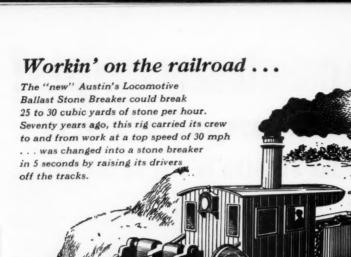
do more" you can build maximum strength and toughness in vital parts ordinarily prone to failure. With them, high resistance to wear, fatigue, abrasion and impact can be incorporated. And if your equipment must operate in sub-zero temperatures or under unusually corrosive conditions, high resistance to these destructive forces can readily be secured.

In addition, these U·S·S High Strength Steels—because they have a yield point 50% higher than ordinary structural steel—can be used to materially increase the strength of parts without increasing their weight. Or they can be used in lighter sections without in any way diminishing strength or stamina. In the latter case, substantial savings in steel will result. This is important now, with steel in restricted supply.

Our engineers for 16 years have cooperated with manufacturers in applying U-S-S High Strength Steels to construction equipment famous for its reliability, long life and low maintenance cost. They will be glad to show you how these tougher, stronger, more durable steels can be applied to give your equipment the stamina to stay on the job.

AMERICAN STEEL & WIRE....COLUMBIA-GENEVA STEEL....NATIONAL TUBE....TENNESSEE COAL & IRON
UNITED STATES STEEL SUPPLY, WAREHOUSE DISTRIBUTORS....Divisions of UNITED STATES STEEL COMPANY, PITTSBURGH
UNITED STATES STEEL EXPENT COMPANY, 1844 YORK





has progressed in just one man's lifetime! Of all the things our country is noted for, perhaps the greatest is its ability to develop machinery to save the labor of men . . . the cause and keystone of its ability to grow so fast. For over 50 years, Traylor has been most active in furthering the development of more efficient machinery for the construction industry. In fact, Traylor equipment is known all over the world for its modern design and rugged dependability. Construction men have come to depend on experience to supply the answers . . . not only in their own work, but in the work of men who supply them with the tools they need. That's why they depend on Traylor. For Traylor has experience . . . half a century of it.



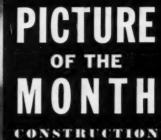
ENGINEERING & MANUFACTURING CO.

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A TRAYLOR LEADS TO



GREATER



CONSTRUCTION
METHODS AND EQUIPMENT



THIS 52-TON MONSTER rips a 16-ft swath through dense mesquite and brush on the King Ranch (The Running W) in Texas to reclaim grazing lands. The big brush mauler is built around two Caterpillar DB tractors with inside tracks removed and tied tagether to create a "Siamese Twin DB" producing 270 hp. Extending forward is a 7-ton funnel dozer made from a standard Caterpillar angledozer blade cut in two, with one section mounted on each side to daze inward at a 45-deg angle. Heavy knockdown bars overhead push the brush over and the blades windrow it between the tracks. A 6-ton rear-mounted root plow with double V-type blade slices along 16 in, below ground te sever roots. Peterson Tractor & Equipment Co. of San Leandro, Calif., and the Wm. K. Holt Machinery Co. of San Antonio, Tex., built the machine. Holt regularly makes funnel dozers and root plows for standard Cat DB tractors. Peterson Tractor assembled its first Siamese DB about two years ago for high-capacity bull-dozing and scraper operations on large earthmoving jobs.

HEAT TANK-CARS FASTER

uses less fuel..water..work



with a Cleaver-Brooks MOBILE TANK-CAR HEATER



Quick Job-to-Job Transport

This trim, compact, highly efficient, trailer or truck mounted steam generator is easily towed by car or truck — anywhere you need steam — for heating, thawing, cleaning — at tank-car siding, construction site, or material yard.

Hot Dry Steam in 20 minutes or less

Designed for fast steaming, the Cleaver-Brooks Tank-Car Heater gives you 125 lbs. of steam pressure in 20 minutes or less — from a cold start. It's the only tank-car heater with the fuel-saving fourpass flue travel construction. No water problem — full condensate recovery and return to heater under pressure.





Built for Full Capacity ... Full-Time Work

Not just a "boiler on wheels" but a sturdy, compact, steam generator built by specialists in steam generating equipment — the pioneers and originators of tank-car heaters and bituminous boosters. Design and construction provides maximum steaming capacity with lightest weight for easy portability. Available in three sizes, trailer or skid mounted — 1 car heater (17 bhp) — 2 car heater (28 bhp) — 3 car heater (42 bhp). Write for the catalog.

CLEAVER-BROOKS COMPANY
Dept. B-398 E. Keefe Ave., Milwaukee 12, Wis.

BUILT WITH THE FAMED FOUR-PASS HIGH EFFICIENCY DESIGN OF



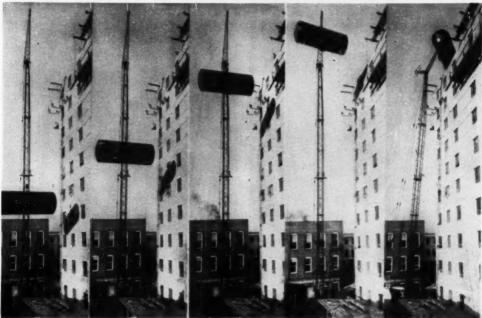
Get the complete facts on the only tank-car heaters built with the fuel saving four-pass flue travel constrution—send for the Cleaver-Brooks Tank-Car Heater Catalog,

for heating, thawing, cleaning

Cleaver-Brooks



Construction News in Pictures . . .



WAY UP, AND OVER—Photo progression of Lima 34 truck crane, with 100-ft boom and 20-ft jib, lifting a 12,650-lb water tank to the top of the Palmetto State Life Building Annex in Columbia, S. C. Tank was lifted to a height of 108 ft and swung out

at a radius of 24 ft. It is 22 ft long, 8 ft in dia and has a capacity of 8,000 gal. Contractor is W.O. Blackstone Heating & Plumbing Co., Columbia, and crane is owned by Conway Construction Co., Greenville, S. C.—Munn & Teal photo



PRACTICAL BEAUTY — Virginia Hendershot, blonde 21-yr-old daughter of a Bound Brook, N. J., contractor, is the regular crane-shovel operator for her father. Although she has been a Conover model, Virginia's equally well-poised in the hoe.



WORKING THE SPOIL PILE — River becomes dumping ground for excess snow from Toledo, Ohio streets as city employees work around the clock to remove a 9.7-in. covering of the white stuff. Crawler tractor with special bulldozing equipment takes over after trucks have dumped snow on the banks of the ice-coated Maumee River. Operator, inside his winterized cab, pushes large heaps into the river for disposal.—Wide World photo (Continued on page 44)

Construction News in Pictures ... Continued



WHEELCHAIR ASSIST—Hospitals usually have lowpitched ramps for wheelchair and crutch patients. Here is an outdoor ramp under construction at the Home and Hospital for Crippled Children, Newington, Conn. It will have a snow-melting system of 1/4-in. Byers wrought iron pipe.



POURING IT ON—Painters at New Kensington Works of Aluminum Co. of America cover fence with aluminum paint by pouring, instead of brushing. Panels fitted closely on each side guide paint down wire as it is poured. Excess drains into catchpans. Alcoa paint foreman, R. W. Spence, developed the idea.



VETERAN SAVES MONEY—This 28-yr-old McMyler Interstate crane recently was converted from steam with a 200-hp Model NHIP-600 Cummins diesel torque converter unit. Owner, Cleveland Builders Supply Co., Cleveland, says it uses 98.68c worth of fuel in an 8-hr day. As a steamer, it burned 1 ton of coal per day.



TRAFFIC AS USUAL — Eimco Rockershovel cleans up fallen rock in Price canyon along U. S. Highway 50 in Utah. State stipulates that traffic must be kept moving; compact Rockershovel fits the bill. Some of the collected rock and rubble is dumped over the edge of the road at right—remainder is loaded into trucks.

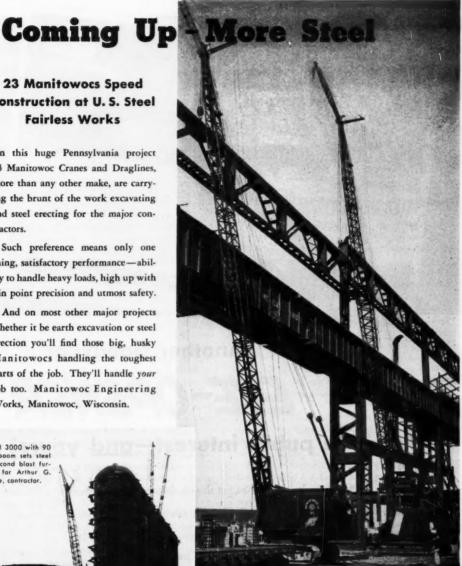
23 Manitowocs Speed Construction at U.S. Steel Fairless Works

On this huge Pennsylvania project 23 Manitowoc Cranes and Draglines, more than any other make, are carrying the brunt of the work excavating and steel erecting for the major contractors.

Such preference means only one thing, satisfactory performance-ability to handle heavy loads, high up with pin point precision and utmost safety.

And on most other major projects whether it be earth excavation or steel erection you'll find those big, husky Manitowocs handling the toughest parts of the job. They'll handle your job too. Manitowoc Engineering Works, Manitowoc, Wisconsin.





American Bridge uses a Model 3500 and a Model 3900 Speedcrane to set a heavy girder for the Open Hearth building. Reach plus stability means speed and safety.





Another Goodyear

EYE-OPENER

—in the public interest—and yours!

To help you help America get the *modern* highway system we all need so desperately, here is another in Goodyear's precedent-setting series of two-page, full-color advertisements in multimillion circulation news magazines.

Another reason why it pays always to BUY and SPECIFY

GOODFYEAR

THE GREATEST NAME IN RUBBER

Harold W. Richardson, Editor

Roll Out the Belt Tighteners

ONE GADGET WASHINGTON had better not clamp down on this spring is belt tighteners—for many a contractor will need one as the year unfolds. Over-all, the construction volume will approach the record total of 1951, but pickin's will be mighty slim in many parts of the country.

The way things are shaping up on the Potomac, construction rapidly is being cut down to bare defense essentials. Unless there's a super-duper defense job slated for your front yard, it looks like you'll have to go far afield to find work or else tighten up the old belt and scramble for the few local construction crumbs that somebody forgot to sweep up in curtailment orders.

And that's a bad situation, not only for construction, but for the nation. The construction industry is so vital in the defense mobilization program—and in war if it comes—that it must not be allowed to deteriorate. Construction's might must be maintained in these perilous times if the country is to remain strong.

One way to help keep the contracting end of the industry strong would be to divide up the big jobs as far as possible. This can be done in two ways: by splitting up the projects into smaller separate contracts, or by more extensive subcontracting by the over-all general contractor.

The first suggestion has the disadvantage of throwing additional coordination and administrative duties on the contracting agency. Yet the plan is working well for the Corps of Engineers on the large dams on the Missouri River. Anyway, it does keep more contractors alive and in business.

More extensive subcontracting would be a better method of distributing the contracting load, for this plan still retains the directive operations under one contracting head. Contracting might take a tip from the Construction Industry Manufacturers Association. CIMA has set up a clearing house within its organization for subcontracting machinery manufacture. The plan is working fine for it puts to work otherwise idle capacity in many plants.

A similar clearing house might be set up within

the framework of the Associated General Contractors' 120 chapters. The managers and secretaries of these chapters know their members intimately. They know the strength, capability, equipment inventory and availability of every firm on their lists. Here is a potential pool of contracting strength that should be utilized.

There will be a lot of belt tightening in respect to equipment this year. We're awful close to control of end products—a polite term for equipment rationing—especially in respect to tractors, graders and certain sizes of shovels. Second-quarter steel allocations for construction machinery have been cut down to 70% of the industry's capacity. Steel has been denied certain specific products, such as standard road forms and truck mixers, on the premise that enough of these products is available at present. Some manufacturers disagree with this contention.

And the only solace we get from NPA in respect to equipment is that the situation will get worse before it gets better—but there is a bright dawn two or three quarters ahead.

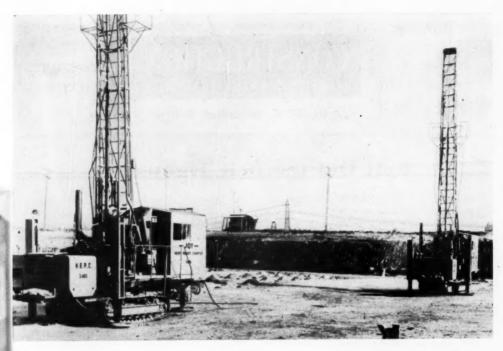
Meantime, the construction industry can do a lot to keep itself alive and strong. It can proceed with those parts of projects not requiring critical materials. It can design structures to utilize available materials. After all, only steel, copper and aluminum are in short supply. Of course, these are traditional and important construction materials—but there is no shortage of brick and tile, cement and mortar, asphalt and tar, or timber.

If we're smart we can keep this great industry rolling, despite what seems at times to be deliberate attempts in Washington to kill it on the part of those who hold construction to be inflationary.

Construction is progress and since when was progress ever inflationary?

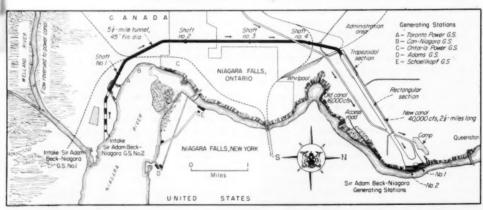
Roll out the belt tighteners and we'll keep going.

Rich



New Blast-Hole Drills Spark Excavating 4½ Million Yd of Rock on Ontario Hydro Canal

By HAROLD W. RICHARDSON, Editor



BIGGEST JOB IN CANADA is the \$182,000,000 Sir Adam Beck No. 2 hydro project at Niagara Falls. Current operations include 51-ft tunnel 5½ mi long, to be duplicated later; 2½-mi canal 200-ft wide, and new powerhouse accommodating 7 of 12 ultimate 100,000-hp units. This map shows general layout of project in re-

lation to existing hydro plants in the area. Canada is rushing construction on project authorized by new treaty late in 1950; United States is still arguing about who will build facilities on our side. Since above drawing was made, Shaft No. 5 has been added to new tunnel near intake end.

EXCAVATING 8,400,000 cu yd of material, of which 4½ million yd is rock, from a 2½-mi canal and accompanying forebay would be a mighty big job alone. But it is only part of The Hydro-Electric Power Commission of Ontario \$182,000,000 project for developing 700,000 hp at the new Sir Adam Beck-Niagara Generating Station No. 2 at Niagara Falls.

Besides the canal and forebay, the project includes 5½ mi of 45-ft inside dia tunnel (51 ft excav. dia) and a new powerhouse alongside Sir Adam Beck No. 1 (formerly Queenston plant) containing seven 100,-000-hp units. Provision is being made for future in-

stallation of five more similar units.

Following long custom, Ontario Hydro is doing all construction with its own forces, except the tunnels. Here, because of lack of experience in tunnel driving of this magnitude, the bore was let in two sections to Rayner-Atlas, Ltd., Toronto, and to Perini-Walsh-Pitts and Associates, a combination of U. S. and Canadian contractors.

With all that rock in open cut staring them in the face, the Hydro engineers figured they had better get something big in drill rigs to supplement the flock of wagon drills they had on hand. So they ordered two of the newly developed Joy Champion Heavyweight Blast Hole Drills. One was delivered early last summer, the second arrived on the job early last fall.

According to reports from the project these rigs are performing very well, especially in view of the fact that they are now drilling a shallow top lift, only 20 to 25 ft, recognized as an uneconomical depth for such big drills. Even so, each machine is averaging 29.8 ft of 6%-in. hole per hr, including moves. They should do better on the next lift, which will be about 50 ft.

Drilling operations have been stepped up by the recent addition of two Ingersoll-Rand Quarrymasters, and a third machine is on order. At the time this article was written, no reports of operating results of the Quarrymasters were available.

Before we start drilling, let's get oriented. To understand what is going on at this big development, you had better take a look at the accompanying map.

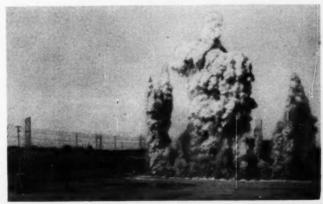
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HERE IS ONE of two new type Joy rotary blast-hole drills at work

HEKE IS ONE of two new type Joy rotary blast-hole drills at work on big canal section. Crawler-mounted electric-powered drill rig carries integral folding derrick, uses roller-cone bits, levels up with three hydraulic outriggers, and moves into position fast for spoting over new hole. Cuttings, removed by continuous blast of air from compressor on machines, are caught by dust collector. Rock is being excavated in 23-ft top lift, to be followed by bottom lift of up to 50 ft. Drills are showing remarkable efficiency in averaging 30 ft hole per hr, including moves.



ROLLER-CONE BIT is adopted from oil field operations. Joy Menufacturing Co. demonstrator holds one of the bits, new to construction.



BIG BOOM results from charge of 6-in, geletin cartridges fired by millisecond delays and Primacord. Holes are loaded with 60%, powder in bottom, followed by alternate layers of stemming and 40% powder. First lift is about 23 ft, second lift up to 50 ft will follow, carrying rock excavation to canal grade.



SHOTS LEAVE pile of well-broken rock like this, easily loaded out by Northwest, P&H and Marion shovels into Mack and Euclid end-

dumps and Euclid bottom-dumps for haul to three disposal areas that will be leveled and landscaped to preserve attractive area.



TWIN-POWERED Euclid scraper on overburden excavation in canal section is further evidence of the way Ontario Hydro, a public power agency doing most of its own construction work, equips its jobs with most modern equipment for efficient operation.



HANGING ON THE RIM of Niagara gorge a TD-18 buildozer and Northwest shovel start excavation for the new powerhouse by casting over side of bluff.

A new treaty negotiated between U. S. and Canada, ratified by Congress in October, 1950, permits diversion of additional water from the river above the Falls equally by both countries for power purposes. But the scenic beauty will be preserved by treaty requirements that at least 100,000 sec ft be permitted to flow over the Falls during daylight hours in summer, and at least 50,000 sec ft at all other times, except if additional water is required for ice flushing.

Canada Goes Ahead

Canada started construction January 1, 1951, to take advantage of the additional water allocation. No construction has started on the U. S. side, for we are still bickering among ourselves as to whether the private utilities, the New York State Power Authority, or some federal agency shall build the necessary new facilities.

An intake tube, some 500 ft long, designed by Ontario Hydro engineers from model studies to permit water diversion without drawing ice into the intake works, will be built just below the mouth of the Welland River on the Canadian side. From the intake tube water will enter a tunnel down a sloping shaft. The tunnel, 45 ft finished dia, extends for 51/2 mi to an upward sloping shaft connecting with an open canal 21/2 mi long that ends in a new forebay above the new plant. The tunnel, being driven from five offset shafts from 210 to

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TO REACH powerhouse site in bottom of gorge, Ontario Hydro had to blast this difficult access road out of the cliff. More than 20

mi of roads were built for access and material disposal for the big job that eventually will produce 700,000 hp for Canada.

330 ft deep, will take a flow of 20,-000 cfs.

Eventually another similar tunnel will be driven from the same shafts, but the canal is being excavated large enough to accommodate the flow from both tunnels. For a short distance below the tunnel outlet the canal is trapezoidal in section, but for the most part it is a rectangular section generally 200 ft wide, averaging 65 ft deep, mostly in rock.

The present 16,000 cfs canal serving Sir Adam Beck No. 1 sta-

tion takes off from the Welland River and skirts around the city. The new canal crosses the old channel, and joins it again in a greatly enlarged common forebay that will serve both plants. Penstocks for new plant will pass through tunnels at top of bluff.

To take care of the construction forces the Hydro Commission has built three camps to house and feed 2,200 men. These are self-sufficient, equipped with hospitals and recreational facilities. Also, the commission has built or re-

built 20 mi of access and disposal roads, including a difficult stretch down the side of the gorge to the powerhouse site.

New Drill Ideal for Job

The new Joy Champion blast hole drills are well suited to this big open-cut rock job. They are crawler-mounted, carrying an integral folding derrick at center of rig for better balance. Three hydraulic jack outriggers level up the



DOLOMITE BLUFF has to be cut away for new powerhouse. Much of rock from top is cast down the slope, picked up by shovel and hauled to disposal areas downstream over Bailey bridge spanning

tailrace of old plant. Short horizontal tunnels connect forebay with 19-ft 2-in. penstocks angling down at 60 deg to powerhouse. Ontario is going ahead full steam; U. S. still is bickering.

machine in fast time. The two at Niagara Falls are electric powered, though diesel power can be substituted, if desired. They travel up to 7 mph, so get around the job fast.

These are rotary drills using roller-cone bits. Cuttings, removed by a continuous blast of compressed air, are caught by a dust collector.

So far, drilling and blasting on the canal have been largely experimental to determine the best and most efficient pattern and procedure. Both 6¼-in, and 6¾-in. roller-cone bits have been tried, with the larger size seemingly giving more economical results. Drillhole spacing has varied between 12x12-ft and 10x10-ft, both staggered.

Overburden runs from 10 to 15 ft deep, and the rock averages up to 75 ft. It is a mixture of shales and decomposed dolomites of varying hardness. At present a top lift of 20 to 25 ft is being taken out, leaving up to a 50-ft lift for the next pass.

Shallow top lift

In the shallow top lift the drills are not working to full efficiency, yet they are averaging 29.8 ft per hr over-all time, including moving and setting up. Experience so far has indicated an average life of 958 ft for 6½-in. bits, and 1,374 ft for 6¾-in. bits. Longest service yet registered is 2,104 ft. for the larger size.

The blast holes are loaded with 60% and 40% gelatin cartridges. Here again no standard loading procedure has been established, but generally 32 in. of powder is put



BAILEY BRIDGING is favorite construction appurtenance on many Ontario Hydro jobs. Here they cleverly cantilevered supports out from old plant to support bridge for haul road spanning existing tailrace. Nice trick, isn't it?

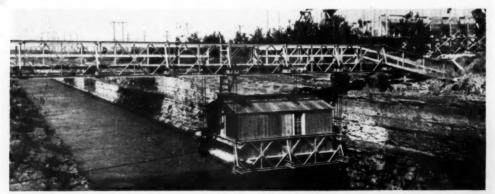
in the bottom of hole, then 16 in. of stemming. From here up 40% gelatin alternates with stemming in various thicknesses. The yield has been at the rate of 1.25 lb of powder per cu yd of rock. This may seem high, but the spoil is being sent to 42x48 crushers without any secondary blasting.

Blast holes are fired with millisecond delay caps and Primacord. Delays run up to No. 11. To increase fragmentation of top rock, single wagon-drill holes 8 to 10 ft deep are put down in the center of each grid of blast holes. These are fired with the big holes.

Specifications call for vertical rock walls along the sides of the 200-ft wide rectangular section. So far, the Ontario Hydro engineers have been holding the blast hole drilling about 15 ft out from the

final line. This 15-ft ledge is later drilled to line with wagon drills and then shot. For the bottom lift the engineers plan to drill and shoot full width of cut with big drills.

Before the blast hole drills were received, rock excavation had been started with a conventional fleet of wagon drills. These are still being used in one section of the canal. A 170-ft center strip is drilled and shot first with a peculiar pattern of parallel V-cuts in 20- to 25-ft lifts. Then the sides are drilled out to within 15 ft of final line in a herringbone hole pattern. In both cases the charges are fired with millisecond delays, with one Vline fired first, the second line next, and so on. Apparently, because the rows of holes come into the cut limits at an angle, a sort of shear-



MORE CLEVER USE of Bailey ridging is found in this pedestrian and pipeline span over old canal that also supports pumping plant serving compressor house in background. Ontario gradually is adding capacity to its hydroelectric developments.

ing action occurs in shooting that reduces irregularities in the exposed face of rock, and also minimizes overbreak.

The accompanying illustrations show the rock excavation operations, and also several other interesting construction features.

Sir Adam Beck No. 2 develop-

ment is under the general direction of Robert H. Saunders, Chairman, and Richard L. Hearn, Chief Engineer, of The Hydro Electric Commission of Ontario. At the project key personnel include: Gordon Mitchell, project manager; William L. Fraser, project engineer; Wm. Hogg, assistant project engineer;

L. J. Gallagher, general superintendent; and John Leighton, mechanical engineer.

COMING—Tunneling operations on the 51ft bores will be described within the next few months, after the headings are turned and driving gets lined up in regular procedure.—Editor

Powder Stud-Driver Simplifies Installation of Trench Bracing

ON MANY a deep and wide sewer excavation, the sides of the trench are held by horizontal sheeting between soldier-beam piles, with the soldiers shored by heavy timber struts across the cut. And these transverse shores usually are supported by shelf angles bolted through, or welded to, the soldier-beam flanges. That's almost routine procedure.

However, in following this general scheme on a deep cut-and-cover sewer in Philadelphia, local contractor Joseph Lombardi & Sons is making one important change: shelf angles are fastened to threade studs driven right into the beam flanges by a powder-actuated tool. This simple switch in the method of

installation is saving 80% in the time required to affix 800 shelf angles on the project, which is part of the city's \$90,000,000 6-yr water and sewer development program.

The Lombardi job, extending 26 blocks through north - central Philadelphia, includes a 14x18-ft sewer 40 ft below grade. Soldier beams that support horizontal sheeting are a 10-in. BP section (42 lb per ft; 0.418-in. flange thickness) driven on 10-ft centers. They are cross-braced by 12x12-in. timber shores resting on 2x2x1/4-in. shelf angles.

These angles, or brackets, are fastened to the soldiers by bolting to two alloy steel Ramset studs (1½ in. long, with ½-in. dia threads) driven through beam flanges by a hand-held self-contained tool that is powered by a powder cartridge. Approximately 1,600 of the fasteners are being installed.

Operating cycle with the Ramset system is about 1 min per fastener.



THREADED STUD is driven into soldier beam by Ramset powderactuated tool. Shelf angle will be bolted to stud to support timber strut to cross-brace cut for deep sewer in Philadelphia.

12*12* Trench sheeting limber strut2*2*1 shell angle
10' soldier beam flange

END RESULT of bolting angle to driven studs is same as for previous method of bolting it through holes burned in beam flange. But time to drive each stud is I min, while time to burn each hole was mearer 10 min.

This contrasts with the Lombardi's previous system of burning holes in the beam, then putting bolts through angle and flange. The company figured it took approximately 10 min to set up for and burn each hole.

According to Joseph Lombardi, Jr., who is supervising the project, the powder-actuated method is being used because of its easy portability and simplicity of operation. "When we want it, it's here. and there's always someone who can operate it." Asked about specific savings, he continued, "Well, one way you can figure it at least 80%. But those savings are not the most important reason for our use of powder-actuated equipment. We don't have to hold up any crews until we get the work done, the new method is completely portable and self-contained, and it can be operated by a common laborer instead of having to arrange for a welder to do the job."

They Prestress 60-Ft Roof Beams Now



CENTER-HOLE JACK pulls high-tensile steel wires to prestress a concrete beam for Ohio brass plant roof. Second man waits to slip U-plate over wires behind end clamp to hold them after they have been elongated enough to give 145,000-psi stress. When prestressing is completed, beam will be litted to span 60 ft like units in background.

BIG PRESTRESSED CONCRETE BEAMS spanning 60 ft, on 20-ft centers, support the roof of W. W. Wakefield Brass Co.'s new 60x200-ft plant addition at Vermilion, Ohio. According to The Austin Co., engineers and builders, the prestressed units use less than one-third of the metal required for ordinary steel framing.

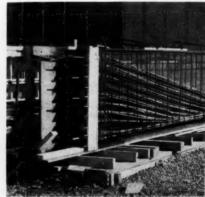
Beams are a modified I-section 40 in. deep. Web is 6 in. thick, top flange is 4 to 6 in. thick and 30 in. wide, bottom flange is 8x12 in. The beams weigh 12½ tons apiece.

Each beam contains 60 strands of ¼-in. high tensile wire (ultimate strength 220,000 psi) grouped in ten pairs of three-wire cables. Wires were covered with an asphaltic compound and wrapped with waterproof paper to protect them against corrosion and the danger of bonding to the concrete. After the wires were positioned, the beams were poured in plywood forms with 5,000-lb concrete having a maximum 2-in. slump.

A week or more after the concrete had set, the wires were tensioned to 145,000 psi by a Simplex center-hole 60-ton hydraulic jack. They were jacked six at a time (two cables) by pulling on plates clamped behind button-heads formed at the end of each wire. When a group of wires had been stretched a predetermined amount (calculated to give the 145,000-psi stress) a U-shaped plate of this



DOUBLE CABLES, each consisting of three 1/4-in. wires, are positioned in form prior to casting beam. Cables have been coated with asphaltic compound and then wrapped in paper.



ALIGNMENT of ten pairs of cables is fixed by 1/4-in. stirrups on maximum 12-in. centers.



FLAMEPROOF TARPS and gas-fired heater protect beam during tensioning operations in freezing weather. Top set of wires has been stressed, lower eight are yet to be done. strut is welded and concreted in form shown.



RE-STEEL extending from beam, column and

length was slipped over them between beam and end clamp. This kept the wires tensioned when the jack was removed. Allowance for shrinkage and plastic flow indicated an actual working stress of 123,-000 psi.

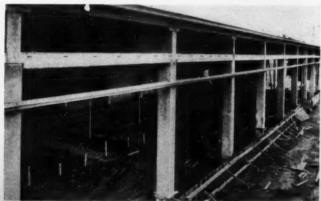
The tensioning procedure was repeated until all ten pairs of cables were correctly stressed, then the beam was lifted by crane and set on cast-in-place concrete columns. There, reinforcing bars projecting from the ends of beam, columns and struts were welded together to make a completely integral frame. The welded reinforcing was ultimately encased in concrete.



REINFORCED CONCRETE STRUT, precast on site, is lifted from form and will be erected to span 20 ft between tops of cast-in-place columns that support 60-ft prestressed roof beams. Neither columns nor struts are prestressed on this Austin Co. building job.



At right, plywood-faced forms wait for erection to enclose open side of beam.



CONCRETE FRAME of 60x200-ft plant addition shows clean lines after sections at junction of beams, columns and struts have been concreted.—Photos from The Austin Co.



HORIZONTAL JIB on tower crane makes it possible to place construction materials over wide area of a building project.



HUGE GERMAN CRANE hoists 206 ft. Tremendous 98-ft jib angles to almost horizontal (with a 4,400-lb capacity).



CRANE OPERATOR is inside cab which he moves vertically inside mast into best position for spotting materials accurately. This is same English crane shown at left.

Tower Cranes Help Europe Build

IN ENGLAND and on the continent of Europe the citizens have a construction boom similar to the one in the U. S. They face twin shortage-creating factors—normal population growth and war-destroyed areas—and have construction problems more severe than ours.

Their economy is strained, and they face a throttling shortage of building materials. In addition, they cannot afford many of the labor-saving devices and highpowered construction equipment usually taken for granted in America.

But the people across the sea are extremely inventive on the job and come up with excellent substitutes in materials. And they produce relatively simple material-handling equipment that is flexible in operation and application. Tower cranes are an excellent example.

• In England, tower cranes are just coming into use, although their use is quite prevalent on the Continent. A typical English crane is shown in use in two accompanying photographs. It is rail-mounted and is powered by electricity. The jib is positioned horizontally to the tower structure and a carriage rolling along its length makes it possible not only to lift materials vertically from the ground, but also to spot them across the top of the building (or over a building site) where they are needed. The jib has a reach of 40 ft and a safe working load at maximum reach of 1.120 lb.

Height of the retracted hook is 46 ft. The operator sits in his cage inside the square tower mast and positions it vertically to the height most advantageous for the best view of the operation at hand. Hoisting speed is 98 fpm; weight is 4.2 tons; added ballast weighs 6.5 tons; and it can be erected in about 4 hr



ANOTHER GERMAN IDEA is a 50-ft-high erecting stage on rails.

Operations platform can be moved vertically. Small cranes suspended from platform place materials.—Wide World photo

by 3 men. The price is in the neighborhood of \$4,000. When dismantled, it can be transported readily on a motor truck, or road wheels can be attached to the base and the unit towed over highways after jib and mast have been removed.

The full flexibility of the tower crane is revealed in its ability to move laterally along a multi-story building (or between rows of structures in a housing project) and reach out and over to where building materials are to be placed, convenient to the workmen. Also, if the job is planned properly, the crane can be used to unload trucks and sort and stockpile materials.

 German tower cranes normally are assembled at the site and remain stationary. Typical units have a 65-ft jib and total hoisting height of 130 ft.

A much larger one, however, now is being used in Frankfurt (see illustrations). Built by Julius Wolff & Co. of Heilbronn, it has a hoisting height of 206 ft and a 98-ft jib. The crane itself stands 147 ft high. Full hoisting height is reached by raising the jib.

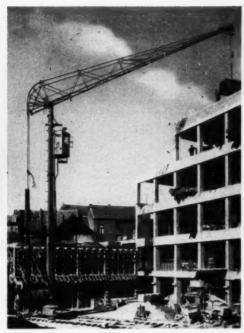
Hoisting, moving and swivelling are done by separate drives. For moving, due to the large initial weight, each side of the beam has its own motor. Capacity of the motors is as follows: hoisting, 52 hp; moving, two 13 hp each; and swivelling 13 hp.

Hoisting speed is up to 150 ft per min. Hoisting capacity: 13,200 lb at 50-ft length of jib; 8,800 lb at 65-ft length; and 4.400 lb at 98-ft length.

In order to cut costs of assembly and dismantling, the Wolff firm has developed a method whereby the whole tower is assembled flat on the ground and is then lifted by its own winch. A small movable jack is used for this purpose. Assembly and erection of the large crane take 14 days.

This firm also has developed safeguards against overloading. The operator's switchboard is equipped with indicators enabling him to adjust power to the particular length of jib and related top load.

The loading hook of this crane can range extensively and quickly over a construction site. Considerable savings in manpower for transport of materials and sections assembled on the ground are reported.



IN BELGIUM, rotary tower crane is built of tubular sections. Has variable-height operator's cab, 115-ft lift, 66-ft boom reach, lifts 41/2 tons. Was designed by A. Wullschleger, a Swiss engineer.



CLAMPED TO SCAFFOLDING, this gas engine-driven Saga winch and jib of British Hoist & Crene Co. speeds work on small jobs.



Under Seattle's Exacting Building Code Requirements...

Tilt-Up Construction Does the



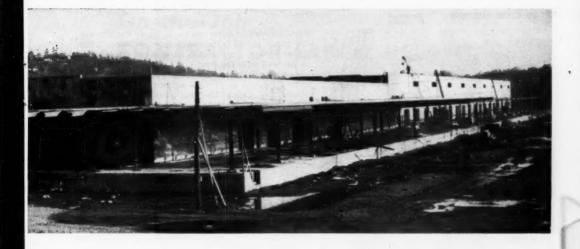
WALL-SECTIONS WERE CAST on floor of loading platform surrounding the warehouse. Reinforcing steel $\{1/2 \text{ in.}\}$ was tied into a mat and concrete poured by a bucket spotted over the form by a crane. A 6-sack mix was used; minimum panel thickness is 6 in.

ANOTHER LARGE BUILDING constructed by the tilt-up method is the \$2,250,000 Associated Grocers Co-Op warehouse at Seattle, Wash., being built by Morrison-Knudsen. It is formed of wall panels which are among the largest built. Each wall-section measures 32x30 ft and weighs about 35 tons; minimum thickness is 6 in. and beams are 12 in. thick.

Originally, masonry had been proposed for the 1000x330-ft warehouse but was ruled out because of the Seattle building code's exacting requirements for this type of construction. Cost of the tilt-up method runs substantially below the cost of form concrete, with an estimated loss of only 5% in wall strength. The tilt-up method here also results in time-saving of at least 20% in comparison with reinforced concrete.

The concrete floor slab was prepared with a 3-in. beveled groove, or "keyway," where the walls were to rise. Reinforcing steel (½ in.) for each wall-section was pre-tied on the warehouse floor just inside this groove.

Frames of 4-in. pipe then were inserted in the mat, cable slings attached, and the mat moved by a crane across the keyway into a form on the loading platform ex-



Job for Grocers' Warehouse

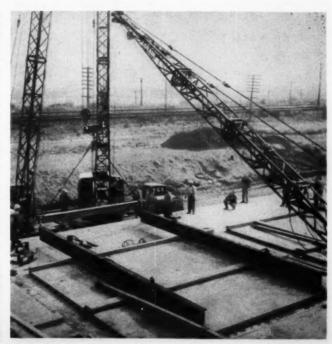
tending around the warehouse on three sides. The platform floor was treated with a special compound to prevent the new concrete from sticking to the old. A 6-sack mix was used and the entire project required 11,000 cu yd of concrete.

After the concrete had set, two I-beam strongbacks were fastened laterally to the panel by nine pick-up inserts in each strongback. Also fastened to the panel were the upper ends of two hinged, heavy timber braces, designed to hold the panels upright in winds even of hurricane force. Each brace was fastened to a steel plate bolted to the floor within the warehouse. Between the brace and the floor plate was a turnbuckle with a 5-in. play.

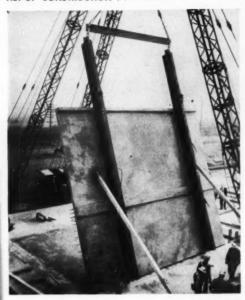
Three cranes were used to tilt up the panels; two 15-ton cranes with 70-ft booms on the outside and a 10-ton crane with 50-ft boom on the inside floor slab. At first, a spreader bar and equalizer bar were used to divide the load, but later each of the two outside cranes fastened directly to a strongback and coordinated their lifting. The cranes worked parallel to the wall, so they could move quickly.

Each panel had a beveled tongue at the lower end which slipped into the keyway as the panel was tilted.

(Continued on next page)



THREE LORAIN CRANES tilt the 35-ton panels into position. Two 15-tonners with 70-ft booms lift in unison from outside the building and a 10-ton model with 50-ft boom works from the warehouse floor slab. Lift is through two 1-beam strongbacks.



Once the tongue came within ½ in. of the keyway, the panel would slip easily into position. Later, where needed, concrete was troweled at the juncture of the wall with the floor.

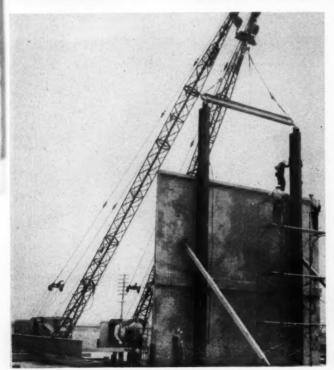
As the wall reached an upright position, the braces were tightened to provide support and the outside cranes moved on to the next panel while the inside crane removed the strongbacks, after workmen on a movable scaffold loosened the pickup inserts with impact wrenches. The walls were plumbed later by a carpenter.

Although only 4½ min were required to lift a panel into place, another 10 min were needed to remove the strongbacks and move the inside crane to the next panel. The building has a total of 86 panels, of which 20 were erected in one day. Two sets of strongbacks were used. The panels were joined by pilasters 2 ft thick with ¾-in. reinforcing steel, after which the braces were removed.

Morrison-Knudsen Co., Inc., holds the contract, scheduled for completion on March I. Aner Erickson is project manager.

4

APPROACHING VERTICAL is 32x30-ft panel. Bottom of panel has beveled "tongue" that fits into 3-in, groove in floor slab. Timber braces bolted to floor plates secure upright panel.



TIMBER BRACES now hold panel vertical and workmen disconnect spreader bar from strongbacks so cranes can move to next panel. Movable scaffold speeds loosening of l-beams which are lifted away by inside crane. Braces have turnbuckles to plumb walls.



INTEGRAL BEAMS in panels are 12 in. thick. Tie-in steel at edge of panel and in floor slab is for 2-ft pilaster that joins panels.

On-the-Job CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

Enforcement of Wage Stabilization

ANY DOUBT that may have existed as to the teeth in the Wage Stabilization Board's enforcement regulations should be dissipated with announcement of the penalties assessed against the first violator charged under these regulations. This first complaint, filed by the Detroit Regional WSB, was directed against a contractor who paid \$3 per hr to bricklavers employed on the construction of the Veterans' Administration hospital at Ann Arbor, Mich .- a rate equal to the one allowed for Detroit but 25c per hr above the legal rate at Ann Arbor, approximately 30 mi away.

The Regional Enforcement Commission ruled:

- (1) That the contractor, in calculating the 1951 federal income tax, shall not be allowed to deduct \$40,000 of the \$116,131.50 brick-layer payroll.
- (2) That the Veterans' Administration be instructed to deduct \$40,000 from the amount due the contractor.

The enforcement commission indicated that under the Defense Production Act it could have ordered disallowance of the entire \$116,131.50 for tax purposes and reimbursement from the VA, but "softened" the penalty because the company had not been guilty of "any acts of dishonesty or concealment."

Under WSB procedures, questions of violations of wage regulations are investigated by representatives of the appropriate Regional Office of the Wage-Hour Division. If violations appear to exist, the complaint is issued by the Regional WSB. Hearings are then held before a quasi-legal regional enforcement commission which determines if violations exist and, if so, the penalties to be invoked. If penalties are assessed, the employer may appeal to WSB's National Enforcement Commission in Washington.

It is reported that the contractor

in the Ann Arbor case will appeal the decision to the National Enforcement Commission since it is claimed that the regional commission did not give proper consideration to the evidence.

It is apparent that WSB intends to make it costly not to know and follow its regulations. Without making a thorough study of the World War II record, it is hard to recall a single case in which a contractor received as stiff a penalty for similar violations of wartime wage controls.

NLRB and the National Joint Board

In a recent jurisdictional dispute case, the National Labor Relations Board set a precedent and gave added strength and validity to the actions of the National Joint Board for the Settlement of Jurisdictional Disputes in the Construction Industry. In the first case of its kind, the Board dismissed the complaint against a building trades union because both unions involved in the jurisdictional dispute and the contractor previously had agreed to accept the decisions of the National Joint Board.

Section 10(k) of the Taft-Hartley Act stipulates that the NLRB shall act upon jurisdictional disputes unless it finds that the parties to the dispute have agreed to a voluntary method of adjustment.

In the case in question, the contractor assigned to laborers work that was claimed by carpenters, and the latter struck. The contractor, instead of referring the case to the National Joint Board, filed an unfair labor practice complaint

against the carpenters under Section 8 (b) 4(d) of the act. The Board refused to act on the grounds that all parties in the case had agreed to accept decisions of the National Joint Board.

It is to be noted that when the agreement to establish the National Joint Board was being negotiated it had the tacit approval of NLRB and its General Counsel; both realizing that neither was equipped to act upon jurisdictional questions in the construction industry. It was appreciated that contractors and unions, with their thorough knowledge of practices in the industry and customs in different localities, were better qualified to handle such disputes. The National Joint Board has, therefore, been handling jurisdictional disputes on construction work for more than three years and NLRB quite properly refused to condone bypassing it by a party to its agreement.

Do You Know That:

WSB does not consider a partner in a business as an employee and is not interested in his compensation?

Connecticut has a new \$.75 minimum wage act and that New York is considering the same, with both laws covering workers not subject to the federal Wage-Hour Law?

More than half the wage petitions submitted to WSB and the Regional Boards are delayed because of insufficient information?

The Salary Stabilization Board has ruled that, under certain conditions, additional compensation can be paid to salaried professional engineers when they work extended overtime?

• Leon Kromer writes from first-hand experience with construction labor situations. As a full-time labor specialist for a large contractor, he keeps in contact with management and workers connected with most of the trades found in the industry. His practical summaries will appear in Construction Methods and Equipment as a regular feature. We believe that contractors will want to file this and subsequent labor relations pages for handy reference.—Ed.

Contractors Lay Submarine

• Submarine pipelines to transport crude oil and refined petroleum products between shore-based terminals and ships lying at anchor off coastal areas where no port facilities exist are becoming increasingly popular. Their increased use is one result of present defense needs—coupled with a tremendous world-wide increase

in domestic consumption of fuel and diesel oil, gasoline, and other petroleum products.

Recently, three separate installations of submarine pipelines for essentially identical purposes were made: two on the southern California coast and one half-way around the world at Port Moresby in Australia.



TUG PATROLS TOW CABLE to guard against snags as big barge winches first 900-ft section of dual submarine pipeline into the

Pacific Ocean off California coast. Note in foreground the wood sled with steel bottom to support pipe ends.

Pipeline Gets 2,400-Ft Sleigh Ride to Sea

By JAMES JOSEPH

CONSTRUCTION CREWS laid a 2,400-ft, dual submarine pipeline out into the Pacific off the coast at Gaviota, Calif. The dual lines are "pick-up" points for tanker loading and have a loading capacity of 7,500 bbl per hr.

The job specified the laying of 2,400 ft of heavy-duty, 12-in. line, and anchoring it to a buoy. A 120-ft 10-in. flexible rubber hose, designed to be hoisted aboard tankers, makes the final shore-to-ship connection when oil transfer is under way in the 55 ft of water.

The job had to be done in a single continuous operation. To have attempted laying the pipe in sections would have invited "sand-

ing-up" of the submerged pipe as shifting coastal currents eddied around it.

Dual lines were necessary because oil from the near-by Zaca field is so heavy that without a circulatory system it would have been impossible to keep the lines clear. Hot, diluted crude oil circulates through the lines from a pumping station about 300 ft inshore.

Hood Construction Co., Los Angeles, was general contractor on the project. Charlie Shearman, superintendent for Hood, got his men started at 7 am and by 10 pm the same day, they had the line laid, using a temporary standard-gage

railway track and specially built sleds.

Before the pipe could be laid, divers had to blast away a coral reef which lay some 75 to 100 ft off shore, and which protruded up about 14 ft directly in the line's path. Divers used 1,500 lb of tube dynamite, laid along the reef's edge and held in place by sand. Tubes were 20 ft long.

Also prior to pipe laying old railroad rails of standard gage were laid from the low water line 915 ft inland. The long rail line was necessary because pipe-sections were welded together in 900-ft lengths, so that only three "pulls" were necessary to lay the entire

Pipelines in Long Sections

2,700 ft. Tracks were laid on 7-ft ties, on 5-ft centers, and greased with lard. (Hood bought up the entire lard supply of a local grocer.)

The 12-in. pipe arrived on the job in 40-ft lengths. These were welded into dual lines, 900 ft long, and laid atop cradles (sleds) which rode the rails. Cradles were made by nailing two 2x12's together, attaching 2x3-in. angle-irons along their bottoms to guide the cradles along the rails and by notching 2x6's fastened to the cradle's topside to fit the pipe. The underside of the cradles was larded, too.

The pipe lengths were X-rayed, air-tested to 100 psi, and subjected to 800 psi on the hydrostatic test.

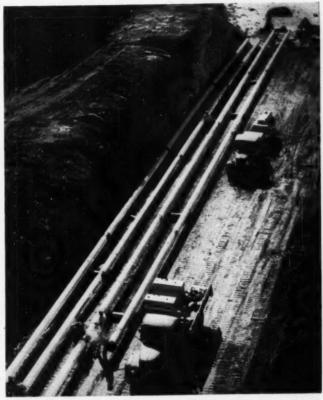
Altogether, six 900-ft lengths were made up. One dual-section was made up on each side of the track, and one was constructed on the track itself.

All pipe joints were fitted with protective sleeves over the welds; this to prevent abrasive action of the sand from destroying the welded joints.

Jacks Hold Sleeves

Split sleeves were welded over the pipe junctions. First, the bottom half of the sleeve was held tightly against the lower seam, using a 15-ton hydraulic jack to draw up the 1/2-in. chain which positioned the sleeve. After this section of the sleeve was tackwelded, the top half of the sleeve was fitted over the welded pipe joint, and the procedure repeated. About 24 lb of rod were used at each sleeve weld, and about 6 lb on straight welds which lie along the beach section of the line, out of reach of salt water and sand abrasion. The entire pipe was coated with Somastic.

A sled with steel bottom and heavy timber construction supported the lead section of the pipe to keep the double pipe ends from burying themselves in the ocean floor as a barge off shore dragged the pipe into the sea. This sled was 16 ft long and 7 ft wide and carried the bridle, as well as the towing bar. On to this was hooked a 1%-in. plow steel cable from the 100-ton tow barge anchored about 500 ft beyond the terminus buoy. A single cable was used for the



DEEP CUT WAS BULLDOZED inland to ease towing of pipeline into sea. Pipe sections are joined by welding and laid on wood cradles which slide on steel rails on the ground.



PROTECTIVE SLEEVES ARE WELDED across pipe joints to guard against abrasive action of and in the sea. Split half-round sleeves were employed; 24 lb of rod used at each joint.

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first 1,800-ft pull (two pipe lengths). After that, with the pull about 150 tons, three 1%-in. cables were used.

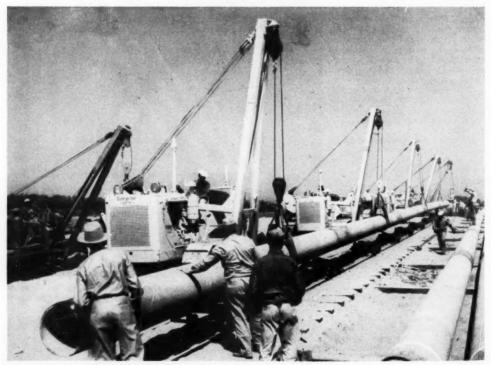
Crews on the Smith-Rice Derrick Barges, Inc. tow barge used radio to communicate with construction men on shore. In addition, Tidewater Oil Co., for whom the job was done, rigged a butaneoperated foghorn near by. This was a secondary signaling device.

It required about an hour for the barge to winch 900 ft of pipe into the ocean. Then, with the land side of the pipe resting above the highwater level, another 900-ft section was tied on.

Frank Cox was pipeman for Hood Construction Co., C. R. Spaulding was in charge of earthmoving, and Charles N. Rice, San Francisco, supervised the barge operation.

Pipeline Stretches 4,450 Ft From Shore

Information by Caterpillar Tractor Co.



FIVE CATERPILLAR DIESELS with Trackson sidebooms work in unison as the crew lifts a 250-ft section of 20-in, pipe on to dollies on a pleted 500-ft unit pulled into the sea.—Caterpillar photo

FACED WITH A CRITICAL NEED for new transportation of crude petroleum from oil fields in Newhall, Santa Paula and the Ojai Valley, the Union Oil Co. planned a new marine terminal just south of Ventura, Calif. The terminal is to become a storage reservoir for crude products from the fields and for a distribution center for refined products which can be brought by tanker from refineries in Los Angeles and San Francisco.

A 7,500-ft, 20-in. pipeline was

designed to run from the terminal to a spot 4,450 ft out in the Pacific Ocean where tankers can anchor safely to discharge refined products and receive the crude petroleum. The 20-in. pipeline will pump crude from the storage tank to ships at a rate of 14,000 bbl per hr, while an 8-in. line will carry refined products from ship to storage tanks. Both pipelines are made of steel with an inner lining of spun concrete and a gunited outside shell.

The 20-in. pipe, weighing 185 lb per lin ft, was welded into 250-ft sections and lifted on to trolley-way dollies by Caterpillar tractors equipped with Trackson sidebooms. Two sections were placed on the dollies at one time and these sections then joined.

The first 500-ft joined section was supported by a steel sled to support the weight of the pipe as it slid along the ocean bottom, pulled by lines from a barge an-

(Continued on page 69)

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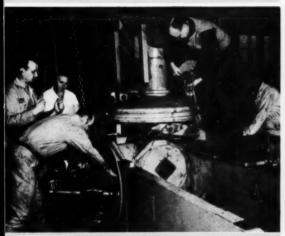
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FRONT END OF LEAD SECTION is secured to steel sled which keeps pipe off ocean bottom as towing progresses. Dike was built to keep out high tide.—Caterpillar photo

chored about a mile off shore. Succeeding 500-ft sections were moved into position for welding to the preceding section, the entire pulling operation for the 20-in. pipe taking 19 consecutive hours—11 less than originally estimated. The

operation then was repeated for the 8-in. pipe which weighs 47 lb per lin ft.

Pacific Pipeline Construction Co. of Montebello, Calif., put down this submarine pipeline—said to be the longest on the west coast.

Sharp Coral Makes Pipe-Laying Difficult in Australia

By McGraw-Hill World News, Melbourne

SOME REAL ENGINEERING DIF-FICULTIES were overcome during the recent laying of a large submarine pipeline at Port Moresby, Australia.

This pipeline takes care of 15,000-ton tankers discharging their cargoes to the Port Moresby terminal. There were neither deep water berths nor jetties available and engineers consider it impractical to construct them in these waters.

The 8-in. pipeline is 4,300 ft long and belongs to the Vacuum Oil Co. Pty. Ltd. Before laying, its route had to be surveyed many times and coral "nigger-heads" had to be blasted out. In some instances it became necessary to set up large concrete blocks to keep the pipeline clear of underlying sharp coral.

The pipeline was fabricated on shore to the exact contour of the sea bed along its route. A special coating against corrosion was applied and the pipeline floated out in one length and lowered into nosition

As an added precaution against corrosion the pipeline has been equipped with cathodic protection. This comprises a series of magnesium blocks attached to the line at specific intervals to set up controlled electrolysis. The polarity of the system is such that the magnesium blocks will slowly corrode, while the pipeline will not be affected by salt-water corrosion. The magnesium blocks will have to be replaced from time to time.

The seaward end of this pipeline connects to 120 ft of special 8-in. submarine-type tanker discharge hose attached to buoys. It can be raised and joined to tanker connections, as required. At the shore end there is a transfer pipe system serving storage tanks set into a hillside.



Chicago 12

25% more production

LINK-BELT SPEEDER with Speed-o-Matic controls



DELICATE SEWER DIGGING between water and gas mains is accurately handled here by an LS-51 owned by City of Greenville, Michigan. Many municipalities and other

governmental bodies choose the LS-51 because faster job action creates striking budget savings.

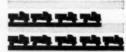
Speed-o-Matic full hydraulic controls mean stepped-up production



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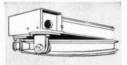


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CEDAR RAPIDS, IOWA



VEGETATION takes hold in a hurry on freshly graded slope treated with new chemical (left), offering resistance to bank erosion. Old familiar pattern of erosion is shown at right where soil was not treated.

New Chemical Soil Treatment Promising for Slope Erosion Control



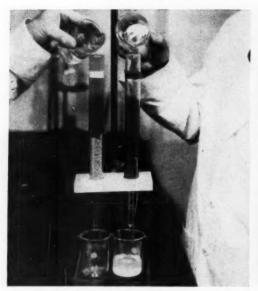
HALF-INCH of simulated rainfall shows effect of falling water on untreated soil (left pan) and on that chemically treated (at right). Note mud splashed from untreated soil against backboard and into front pan: little splashing is evident from sample of treated soil.

REMEMBER HOW MANY TIMES you have seen a beautifully seeded cut-and-fill slope ripped to ribbons by a gully-washing rain before the final job acceptance? And always the contractor pays when that happens. Now Monsanto Chemical Co. (write them at St. Louis 4, Mo., if you don't believe it) offers a possible cure for these exasperating situations in a new soil stabilization chemical known as Krilium.

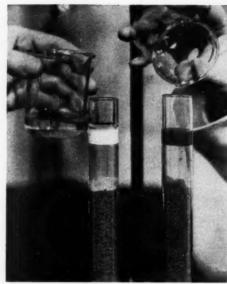
Krilium isn't a fertilizer, but it makes crops, including embankment grasses, grow better. It really is a soil conditioner. Untreated clay soils simply give up when they get wet. They get sloppy. they slough and slide, they wash away easily, and then they bake themselves a tight crust when they dry out, choking plant roots.

But given a shot of Krilium, these same clay soils become rugged and virile. They stand up to rain and moisture and fight back. They stay in place and protect, instead of betray, the little rootlets entrusted to their bosom. The chemical changes the characteristics of the soil from an amorphous to a granular formation. No longer does the clay absorb water and become fluid; no longer does it dry up into a tight and cracked crust. Furthermore, as the treated soil roots are aerated and have access both to moisture and oxygen, they are encouraged to produce bumper crops.

Krilium is such a brand-new development that even Monsanto doesn't know all the answers. At present the stuff costs about two bucks per pound, but it doesn't take much to treat a big expanse of soil. They find you



RATE OF WATER PERCOLATION through treated and untreated soils is graphically shown by this test. In both views untreated soil is in left test tube. Note how water is stopped in left tube by soil slaking



and clogging; water passes readily through treated soil, which has been changed to a granular structure by addition of Monsanto Chemical Co.'s new stabilization material, Krilium.

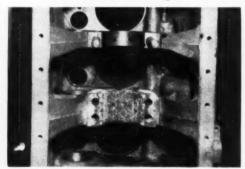
get good results by spreading the dry material mechanically or by hand, then harrowing or disking it into the soil. Or, you can dilute it in water and sprinkle it on the ground.

Monsanto developed the chemical to increase agricultural production. And apparently they've succeeded

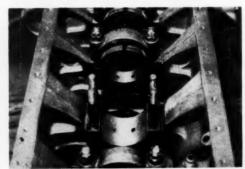
in these ambitions. We've seen pictures of mammoth radishes from treated soil shown alongside puny little vegetables grown in the same soil, but untreated.

But contractors aren't interested in radishes. All they want is to tie down their freshly trimmed slopes before they wash away. Maybe here's your answer.

Autocar Salvages Crankcases With Scored Bores



RESURFACING OF SCORED BORES in cast-iron crankcases with a nickel alloy weld metal has made it possible for the Autocar Co., heavy-duty truckmakers, to report almost 100% salvage success so far. Formerly, crankcases with scored bores were junked. Now the service departments of Autocar factory branches deposit a bead-thick layer of International Nickel Ni-Rod into the bore and machine the deposit down to



original dimensions. Shown at left is a center brace bore with its deposits of Ni-Rod. It first was machined down about 0.045 in. to remove the scored area and oil-soaked metal. Next, the bead was laid down with a ½-in. electrode. Oil holes are circled first, then beads are deposited lengthwise with bore, working outward and alternating both ways from the center. Salvaged and machined crankcase is shown at right.













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There is a Macwhyte Wire Rope that has been specially engineered and job-proved for any particular type of equipment you operate. That's why it pays to specify Macwhyte. Over the year, ropes for all types of equipment in every field have been developed by Macwhyte. Recommendations are promptly available either from Macwhyte distributors or Macwhyte Company, 2041 Fourteenth Avenue Kengah, Wilconnin. 2941 Fourteenth Avenue, Kenosha, Wisconsin.

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"Wire Rope—So What?" (No. 5134)—Illustrated exclusive interview with veteran wire rope engineer who talks straight from the shoulder about saving hundreds of wire rope dollars.

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Concord #20
Steam Hose





Illustration shows how special built-in lining of stainless steel inner wire braid assures long life under the most severe operating conditions.

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BWH Concord #20 Steam Hose has a protective built-in lining of stainless steel wire braid that guards against tube swelling . . . assures dependable, long-lived service.

Dependable

This rugged, braided inner lining assures maximum steam flow...permits easy recoupling in the field.

Other Concord #20 construction features: two or three braids of alternate high tensile steel wire and rubber layers firmly bonded over outside of tube. These provide maximum burst-protection and safety. An asbestos braid provides positive cover adhesion and acts as cover insulator. A durable, abrasion-resistant cover withstands severest abuse.

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CONSTRUCTION 'ROUND THE WORLD . . .





BUILDING WITH BIG BRICKS—Precast houses like this are built in 4 days in Britain. Concrete wall panels are cast on a production line and hauled to the job-site. Top view shows panels being hoisted into place. Interior of casting plant shows line of panels ready for loading. Hinged track-section tilts panels to aid lifting.—British Information Services photo



WATER ON THE ROCKS—Koehring Dumptor wades in to take a load from a Northwest 80-D shovel in the Santa Cecilia Canal, in Brazil, The 8,200-ft canal is part of a hydroelectric power project in the mountains above Rio de Janeiro. When lined with concrete, it will take water from the Rio Paraiba to a reservoir on the Rio Pirai.—Foto-Tecnica Milan photo



MEET WALTER THE GIANT—This walking dragline, dwarfing ordinary equipment around it, is named Walter by the men who built it at the Ransomes and Rapiers' Ipswich works in England. The boom is 282 ft long; its walking mechanism takes 7-ft strides; and the machine weighs 1,500 tons. Cost is about \$1,120,000. The dragline bucket will scoop out 30 tons of earth at one time to

expose an iron ore seam for open-cast mining. A single operator controls the machine from inside an air-conditioned cabin. Visitors will be able to watch operations from a special gallery, where they can see two 1,500-hp generators at work and look up to a 24-ton integral crane used to service internal machinery of the British monster.—European photo

Sinclair Litholine 1330/1 in wheel bearing tests

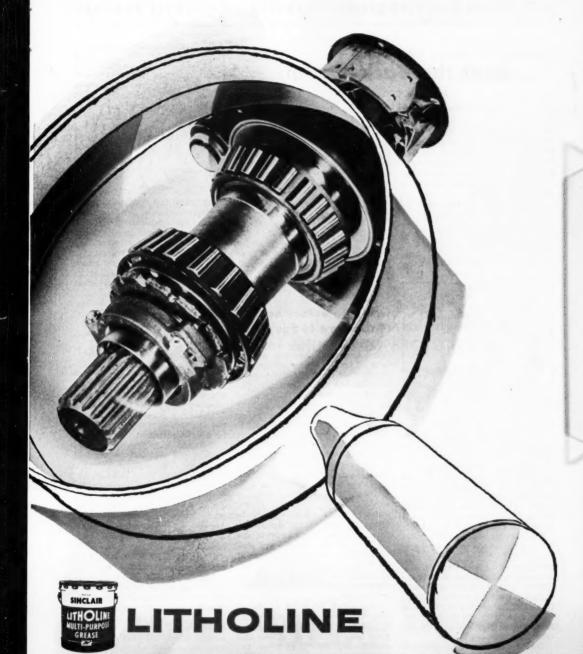
HE critical test of any multi-purpose grease is in its performance in the wheel bearings of heavy-duty mobile equipment. Sinclair LITHOLINE® Multi-Purpose Grease has been proven an outstanding heavy-duty wheel bearing lubricant in exhaustive, year-round tests.

One test was made in a Mid-West city bus line. An inspection after 20,000 miles showed the bearings were smooth and well-lubricated. There were no signs of scratching, pitting, heat spots, gum or varnish. Sinclair LITHOLINE's original character was well-maintained — there was no slumping in the bearing or housing, no softening or liquefying, no separation and no leakage through seals.

This safe, sure lubrication of one of the most vital points of heavy-duty mobile equipment... and its outstanding performance at all other lubrication points... prove that Sinclair LITHOLINE is a real multi-purpose grease... winter and summer.

Send for a free folder describing demonstrations of the superiority of LITHOLINE. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

for every grease lubrication job...SINCLAIR



February 1952 — CONSTRUCTION Methods and Equipment — Page 77

"Maintenance Shop...

A MONTHLY EQUIPMENT SERVICE AND REPAIR FEATURE

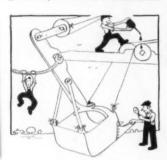
Beat the Back-Order

By HOMER C. CAMPBELL

Service Manager H. W. Moore Equipment Co., Denver, Colo.

AT THIS TIME OF YEAR two things confront many contractors: First, long winter months, and second, a short supply of replacement parts for construction equipment. Now is the time to do something about both of them.

Most construction equipment is down for the winter and that is the time to do a real job on it—give every piece "the works". And this is particularly important to those who do not practice a program of year 'round maintenance.



All equipment should be inspected and, if it needs a complete overhaul, now is the time to get at it. You are pretty sure of getting sufficient parts and, if they should be in short supply, you can afford to wait a while for backorders. (Incidentally, from what we can learn "back-order" is going to be heard more and more.)

Waiting for back-orders after you are out on the job next spring is going to be costly; your lost production might equal the cost of a complete overhaul job. If early estimates have any merit at all, new equipment will be in short supply, therefore, the old job is just going to have to carry the mail for another season for you; perhaps for several seasons.

Distributors of new construction equipment have their shops booked

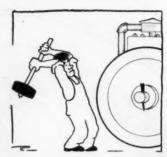
for overhaul and service work for weeks and months ahead, mechanics are scarce, and demands by the armed services are not helping the situation one bit. If you are one of the many who depend upon the distributor for service work, arrangements should be made ahead of time for a date to get your stuff to him. Give him plenty of advance notice and working time. He, like all the others in this hectic industry, is not a magician, he cannot reach into the sack and pull out a completed operation just like that. Time and material are the controlling elements.

Crushing-Screening Plant Care Is Easy

Aggregate-producing equipment is one important item that usually is down for the winter months and should then be given close attention. Considering the materials produced, and the over-all returns on your investment, the modern portable crushing and screening plant is designed for accessibility and ease of servicing. Actually, it is not too great a job to overhaul completely one of these outfits if it has received reasonable care throughout the season. There are relatively few working parts and, while the units are heavy, they are serviced easily.

Jaws in most crushers are made reversible and they should be changed when excessive wear appears. Both the movable and stationary jaws must be kept tight at all times; loose jaws cause excessive wear on other parts of the crushing assembly and can become very costly.

Key plates, or cheek plates, as some call them, are reversible and should be turned when they become worn excessively. These also must be kept tight at all times. Incidentally, crusher jaws, roll shells,



cheek plates and other parts made of manganese steel are in critical supply. Do not discard these items until the maximum use has been had from them, and then when they are replaced see that they get into the steel mill as scrap right away. That is important if we expect to get the replacement parts we want and need.

Inspect the movable jaw wedge, see that it is seating properly and is not putting excessive wear on the pitman through looseness or mis-

The toggle plate is your "safety-valve" for the crusher. Any uncrushable material entering the jaws will break the toggle plate, preventing excessive damage to other working parts of the machine. It is held in place by the tension rod and tension spring which must be kept adjusted at all times.

Rod and spring should be inspected and replaced, if worn or damaged. The crusher eccentric shaft or pitman shaft and bearings should be inspected closely, along with dust seals and grease retainers. If these parts are in good condition, then the grease should be drained and the assemblies flushed and refilled with the proper lubricant

Be sure that fly wheels and drive sheaves are tight to the shafts. If not tight, they should be pulled and shafts and pulley bores inspected for size and condition. These also should be checked regularly while the machine is in operation. Loose flywheels will damage the shafts as well as grease and dust seals—and eventually bearings will fail because the seals cannot function ef-

ficiently and dirt gets in and grease gets out. These points are very important. Watch them.

Roll assemblies need similar attention. If used properly and not abused, roll shells may be built up readily by welding. If possible, do so, particularly now when this material is in short supply. Check the bearings and clean and refill with proper lubricant.

Screen assemblies and conveyors need attention, too. It is particularly important at this time that these seasonal overhaul jobs are done early and completely, to assure a supply of parts to get the job done. It's a good idea to get at it now.

You'll need equipment... Equipment needs steel... Steel needs scrap...

So turn in your scrap ere you end up with nothing but scrap equipment.

Free Handbook How to Use STEEL FORMS

FIND OUT how you can cut costs with Atlas Steel Speed Forms. Make tremendous savings both on labor and materials.

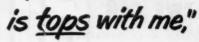
and materiols. Handbook illustrates and describes faster system of setting up, stripping, cleaning, moving, and reusing forms for valls, slabs, circular tanks, manholes, modular structures, etc. All with Steel Forms that go together with wedge clips. No studs needed on walls. No girts on slabs. BUT get the complete story. Send up plans of your job. Let us give you layout and cost studies to fit the individual conditions.

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"Here's why my Skullgard



says Louis D'Amico, J&L Boilermaker



Falling from more than 30 feet, a heavy drift pin drove into the Skullgard worn by Mr. D'Amico while he was fabricating furnace floor plates at the Aliquippa Works of Jones & Laughlin Steel Corporation. The tough, laminated plastic Skullgard and the properly adjusted inside cradle stopped the pin short of Mr. D'Amico's head. Just another example of how enforced safety practice and quality safety equipment can turn an accident into an incident.

and here's what others say about SKULLGARD PROTECTION . . .



SHIPYARD WORKER

"Your Skullgard saved me twice—first from a a falling sledge hammer, second from a falling 2 x 4."



TUNNEL WORKER

"I only had a couple of scratches after a 10-ft. piece of lumber falling 50-ft. hit my Skullgard. Got a new Skullgard and went back to work."

CONSTRUCTION WORKER

"When a drill dropped from 80-ft, and picked my head for a target, I was mighty thankful for my Skullgard. I got a small cut, but was on the job the same afternoon."



STEEL WORKER

"I walked away without a scratch after a steel wedge falling 87-ft. tore into my Skullgard."

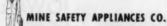




M.S.A. Skullgards have the rugged strength that defles construction hazards . . . plus engineered headbonds that can be adjusted to a perfect fit. And their comfort-qualities encourage full-time hat use. Ask for Bulletin No. DK-15.



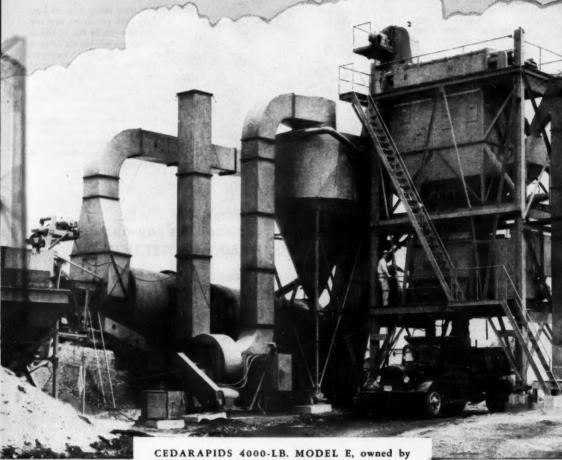
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WE CAN BUILD LUNG ON



CEDARAPIDS 4000-LB. MODEL E, owned by Campanella & Cardi. The plant is complete with a Cedarapids drier, charging hopper and feeder, and a 10' cyclone type dust collector with dust scavenger and dust elevator.

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CEDARAPIDS"

Construction Company
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Check these money-saving features of CEDARAPIDS Bituminous Mixing Plants

- ➡ High capacity 88" x 28' drier allows operation at full capacity regardless of whether or not aggregate contains a high percentage of moisture.
- Use of multiple burner type pressure air atomizers results in extremely low fuel oil consumption.
- Because all mixing takes place below the center line of the pugmill shafts, a completely coated mix can be obtained in 10 to 15 seconds.
- Built-in portability, rugged construction and fast operating controls result in less downtime. Combined with a faster mixing cycle, these features mean lower costs per ton.
- Central operator's panel, air controls, signal lights, interlocking time controls, complete portability, self-erecting tower and rapid set-up are a few of the Cedarapids features that insure ease of operation with absolute accuracy of mix to speed production and make possible LOW BIDS.

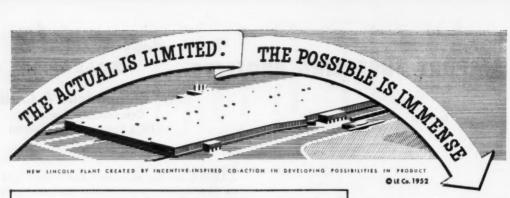
CEDARAPIDS MODEL FA, also used on the Limestone job. In addition, Campanella & Cardi have a 3000-lb. Model E Plant, purchased in 1945, which is still producing.

HERE'S another contractor who is 100% sold on Cedarapids equipment and the Cedarapids advantages that permit low bids on black top surfacing jobs. Campanella & Cardi are supplying bituminous concrete for the Limestone Air Force Base at Limestone, Maine, using two Cedarapids Asphalt Plants... a 4000-lb. Model B and a Model FA. Their two-year contract calls for production of 150,000 tons for the Base, and with their Model E averaging 125 tons per hour under the direction of Joe Papitto, Superintendent, the job is now balf done and abead of schedule, with 75,000 tons already produced!

No wonder so many low-bidding contractors buy Cedarapids!



IOWA MANUFACTURING COMPANY Cedar Rapids, Iowa, U.S.A.



sults from this welded frame design. Distances between ceiling of one floor and the floor level above are also considerably less than with other types

less height per story re-

Approximately 6

welding.

nate spans of approximately 19 ft. between girder ends in which column rather than the girder 6.5 ft. from the columns on both All girders are continuous through the column lines - the being spliced at that point-and ends. This leaves a space in alterextend to a point approximately

umns and girders provides both with a minimum of welding. The 25% of what it would have been girder spans to approximately vertical and horizontal continuity horizontal continuity reduces the deflection of the 32 ft. beam and if they had been simply supported. The relationship of the col-

WELDED FRAME DESIGN CUTS STEEL TONNAGE 15%

tural design, it has been possible to save 15% on steel in the framework for J. W. Robin-"HROUGH welded strucson's new department store in Los Angeles. The most recent department store in Southern California, this 1700 ton frame

This design idea also allows any variations in

gap to be compensated n the splice welds and so further simplify field

a suspended span is

carried.

Fig. 4. Continuous Girder passing over column is spliced at point of minimum stress.

of construction.

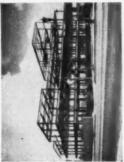


Fig. 3. Four Story Rigid Frame for the J. W. Robinson department notes in Las Madelle, Galifornia. Architects and Lectume and Carrier of Matchen. Structural Doiging and Detailing. Paul E. Jefery and Robert Wider. Associae Structural E. Jefery and Robert Wider. Associae Structural

WELDED DESIGN **ALWAYS SAVES STEEL** AND LOWERS COST



Fig. 1. Typical Column Joint — Develops continuity both vertically and horizontally. Vertical column continuities are shop welded to the continuous beam. Top plate, with slot to give extra weld area, develops continuity in transbeams across column supports.



Fig. 2. Detail of Girder running

through column. Column top and base are welded to beam flange. Vertical stiffeners provide continuity to column.

HERE'S MORE PROOF

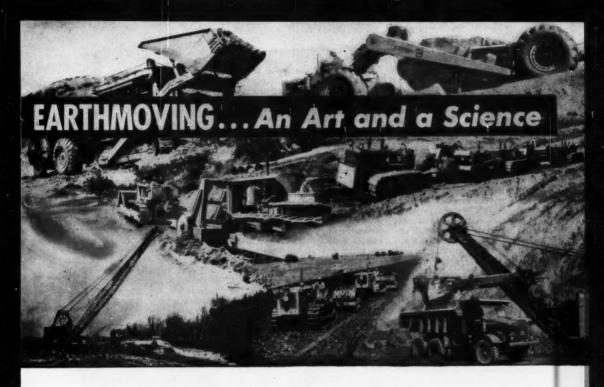
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is almost entirely field welded.



14. Safety Considerations With Excavators

By E. O. MARTINSON, Vice-President, Engineering, Koehring Co.

BEFORE OPERATING an excavator time out should be taken to review safety instructions and precautions. This safety study may save a life or much property. Every man working on or around the excavator should be given definite safety instruction.

This article cannot begin to cover all the ways an accident can happen. It will touch on the more common causes. It is regrettable that some of the more common accidents will happen to those who are aware of their possibilities, all because of taking a chance, or of a moment of carelessness.

The supervisor or owner must remind his men of "Safety First" repeatedly. He should stop unsafe practices immediately.

Basic Requirements for Operators

(Selected from American Standard Safety Gode for Granes, Derricks and Holsts)

 Operator must not leave the seat of an excavator without first disengaging the engine clutch or stopping the engine or shutting off the power, if electric. A clutch might be engaged accidentally while the operator is away from his station.

- 2. Operator must never leave his seat with a bucket or load suspended above the ground with the brakes locked. While the brakes may hold securely at one moment, they may release themselves a few minutes later when the drum cools down causing it to shrink in diameter and loosening the brake. The boom hoist pawl should be engaged before leaving the machine.
- 3. Operator should always set the swing brake and both traction brakes before leaving the machine, even on level ground, as a matter of habit to prevent the machine from moving when he is away from his station.
- 4. Operator must be over 21 yr old, in good mental and physical health and have good eyesight and

This article, the 14th consecutive one in a series on the fundamental principles of earth-maving, is spansored by the Power Crane and Shovel Association.

hearing—especially lift-crane operators.

- Operator should not read, eat, turn around or otherwise divert his attention while actually operating the machine.
- 6. Operator shall see that: loads are well secured before moving them; ropes or slings are not kinked; load does not catch obstructions on lifting; sudden starts or stops are avoided; hoist line is vertical before starting lift; loaded lifting magnets, clamshells, orange peel buckets, dragline buckets or shovel dippers do not pass over heads of workmen; and that no one rides hook or bucket.
- 7. Operator should test brakes and machine stability when heavy loads are first lifted a few in. above ground so he will be sure of brakes holding with load elevated.
- 8. Operator should know that oiler or helpers are clear before backing up machine and should turn boom in direction of travel for longer moves. (Continued on next page)

EARTHMOVING . . . Continued

- 9. Operator of erecting crane should not make moves without signal.
- Machine adjustments—Traction brakes adjustment or pawl action should be checked before going up or down grades. Hoist brakes may need re-setting after becoming heated. If brakes are set too tight, the operator may have less power than if set so that the pedal goes down farther because most brake linkages have increased leverage near the bottom of their travel.

Clutches should be set just tight enough to barely transmit full engine power so they will slip on encountering an obstruction to prevent overstressing cable or other machine parts. Swing brake, if of friction type, should be checked to see that it will hold the machine and load from swinging sideways on a side slope.

- Falls—Falls are a frequent cause of injuries. Machinery decks or platforms must be kept clear, free of grease and oil, rags, cables, chains, buckets and barrels. Handholds and steps should be kept in good order and workmen should not board or leave a moving machine.
- Falling or swinging loads—Falling or swinging loads can cause the most serious accidents; yet many of these accidents can be prevented by the excavator operator. He must be extremely care-

ful when handling loads around workmen on high places. It is easy to brush a man off the top of a wall or beam. Or the workman can be crushed because he cannot get out of the way without falling off an elevated area. Many of these accidents occur on the ground. Swinging loads can catch a man not watching the load. Workmen must stand clear of overhead loads or buckets.

The crane operator should not move a load when anyone is remotely in danger. A welder was crushed fatally while standing between two beams at the end of a row of a dozen steel beams lying on edge several feet apart. The crane operator was moving the last beam 30 or 40 ft away when he accidentally bumped the first beam in the row, knocking it over. It in turn tipped the next one and so on like tenpins until the last one crushed the welder. The possibility of this happening was remote, but it could have been foreseen and prevented.

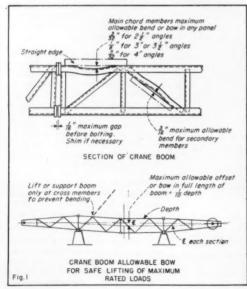
Slings can break, dropping loads. Part of the load can slip out of the sling. Damaged hoist lines are dangerous. Hooks or lifting blocks may let go on overloads. Hoist brakes could fail to hold because of grease or water on the brake lining or mechanical failure of linkage. Damaged hooks should be scrapped and not bent back to position. Hoist lines should not be wrapped around the load in place of a sling.

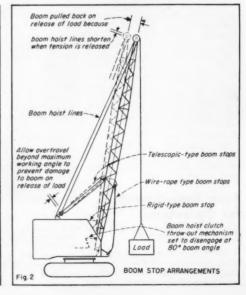
• Boom failures-Boom failures are caused mostly by improper operation of the excavator. A damaged boom may buckle and collapse when first lifting it off the ground. The compressive loads in a long boom are sometimes greater when lifting it off the ground than when carrying maximum loads. It is fortunate that a damaged boom many times will buckle in lifting it off the ground, but this procedure cannot be depended upon as a proof test of boom strength, especially with short booms or high A-frames.

Sudden swinging or stopping of a heavily loaded long boom may momentarily overload it to the point where it will double up. The excavator usually will tip before a properly designed boom will be overloaded.

Boom structural members must be straight. If one of the four main chord or corner members of the crane boom is bent even slightly between bracing points, the boom is weakened. If a boom is bumped against a wall or parapet, or laid over a timber or bucket on the ground—or if the suspended load swings into the boom—it must not be used for further lifts until it has been examined for broken or bent diagonal and cross-bracing members or main chord members.

Even if slightly bent or dented, they should be heated to a dull red and straightened before proceeding further. Fig. 1 shows allowable (Continued on page 86)







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crookedness or bow in the structural members of a boom when lifting maximum rated loads, to retain the safety factor designed into the boom by the manufacturer; the straighter, the better.

· Crane boom stops-When an excavator is converted for use as a lift crane, the boom frequently is operated at high boom angles to obtain maximum lifting capacity and height. If the load is released suddenly, the boom may spring back, causing it to fall over the back of the cab. The same danger exists when traveling with the boom elevated to its maximum angle, or when swinging the machine when its base is not level. The manufacturer usually specifies a maximum boom angle of 75 to 80 deg above horizontal.

Two devices are available to prevent booms from going over backward: (1) Telescopic boom stops, fixed stops or cable anchor stops are available to limit the backward travel of the boom; (2) a boomhoist clutch throwout linkage can be installed to prevent the operator from accidentally pulling the boom over backward.

Crane boom limit stops can cause boom failures also. If a boom

is pulled back against the stops, the boom will bend or buckle if the stops are stronger than the boom. Therefore, the boom-hoist clutch throwout or release mechanism must be set to disengage 3 to 5 deg of boom angle before striking the stops.

Wire ropes when highly loaded, will stretch or spring elastically from ½% to 1% of their length. The suspension cables for an 80-ft boom may stretch as much as 6 in. under heavy load. When the load is released, the cables pull back this amount and, at high boom angles, will cause the boom point to pull back around 2 ft. This pullback can damage the boom if it already is in contact with the boom stops. Fig. 2 shows how a boom could be damaged in this way.

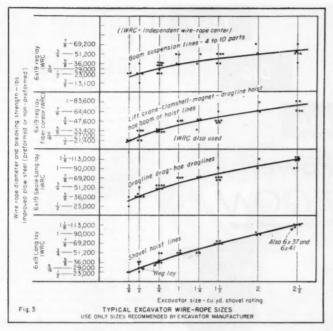
• Booms and overhead electric power lines—Many fatal accidents have occurred because booms or cables struck high-tension power lines when workmen were standing on the ground touching some part of the crane or load. Even though the heavy crane with its steel shoes is in good contact with the ground, there can be a heavy flow of current between the ground and the machine when it strikes a

high-voltage line. A rubber-tired truck crane would not ground the power line even partially. The operator generally is safe if he stays inside of the cab. If he must leave the machine while it is in contact with a power line, he must jump completely free of the machine before touching the ground.

If it is absolutely necessary to work a crane near a hot line, no one should stand near the crane, load, or near where the power line might fall if it burns in two. It does little or no good to ground a crane by connecting it to a pipe driven into the ground because of the relatively high ground resistance. When a crane travels on uneven ground near a power line, the weaving or bobbing of an elevated boom can cause it to strike the line.

• Cable breakage—Cable breakage can cause serious accidents and loss of life when anyone is standing under the load or boom. Wire-rope handbooks recommend safety factors of 6 for hoisting operations. Most draglines and clamshells operate with safety factors of about 4 on the hoist lines with normal-size buckets and boom angles.





It is impractical to use larger lines because then the sheave and drum diameters must be larger. With larger drums, the shaft speeds go down and the shaft torques increase which, in turn, increase shaft diameters and gear sizes. At full engine power, the safety factor on the usual crane hoist line drops to about 2.

Fig. 3 charts most of the types and sizes of wire ropes used on excavators and their breaking strengths. Hoisting lines should not be loaded to the point where the engine begins to stall, even for occasional lifts. A 1½-cu yd machine operating as a crane, clam or dragline usually is equipped with a ¾-in. improved plow steel wire rope—with fiber core—which has a breaking strength of 47,600 lb when new.

For example, the full power-line pull for a 1½-cu yd machine is 25,000 lb. Thus the safety factor would be only 1.9, if full power is applied to the hoist line only. The maximum recommended weight of a loaded clamshell bucket for this machine is about 13,000 lb which gives a safety factor of 3.7; and 11,000 lb for loaded dragline buckets which gives a safety factor of 4.3. Single-line pull is limited to about 15,000 lb for the 1½-cu yd machine and thus the safety factor

would be 3.2, so it is necessary that wire ropes be in good condition to make lifts near the maximum.

Engine power should not be used as a gage for safe line lifting capacity. If the engine is stalled rapidly by line pull only, flywheel inertia adds to rated power and a new rope can be snapped because the momentary line pull can become from 2 to 2½ times the full engine power line pull. Brakes also would be overloaded at loads approaching the maximum line pull. Fast lowering with sudden stops similarly can overload the hoist lines.

Therefore, know your loads. Have an adequate number of parts of line in the hoisting reeving to carry the load safely. Multiple reeving slows the hoisting speed for more safety in spotting material in crane work.

Inspect all wire ropes regularly for kinks and the number of broken wires per "lay" of the rope. A lay is the length of wire rope for a complete revolution of a strand. Thus, if there are 10 broken wires in one lay of a 6x19 wire rope (114 wires) the strength is reduced at least 10%, probably more. Wire-rope handbooks should be studied on procedures for handling and inspecting wire rope.

Boom hoist lines usually get their heaviest loads when the boom is just leaving the ground. The angle of lift is flat and there is considerable inertia in starting or stopping the boom at that point. Boom hoist lines are subject to crushing on the drum, because of several layers of winding. Independent wire-rope centers resist crushing better than fiber cores and are 7½% stronger, indicating that they should always be used on boom hoist lines.

• Handling cable—Injuries often occur when hands or clothing are caught between wire ropes at the sheaves and their guards. Wire rope should be guided on to the drums with sticks, if possible. If hands must be used to guide the rope, gloves should be worn and the hands must never be too close to the drum or sheave. In climbing on top of the machine cab, the hands must never be placed on the lines because a sudden movement may pull them into the sheaves.

Wire rope should be well lubricated with lubricants thin enough to penetrate the inner strands to prevent rusting and internal abrasion.

• Traction and steering—Crawler cranes up to 2½-cu yd are steered by jaw clutches for each crawler. Each crawler also is equipped with a friction brake or locking pawls or ratchets. The operator should become thoroughly familiar with their operation on level ground before working on slopes. He should practice fast emergency application of these steering brakes or locks and the steering clutches.

The jaw clutches do not release under load and the traction clutches must be released before the steering jaw clutch can be disengaged. The steering lever linkage usually is arranged so that brakes or locks can be applied, even though the jaw clutches will not release. It is again cautioned that the operator always set both traction brakes before leaving his seat. If he always does this, even on level ground, it will become a habit.

Most runaway machine accidents occur because the operator is not completely familiar with the operation of the steering and traction mechanism, or he may get excited when the machine begins to run away down a grade or over a bank. The first possibility of this occurring is when the machine is run off the railroad car on to a timber ramp. The ramp may be slippery and narrow and require careful



EARTHMOVING ...

Centinue

steering and the application of power.

It is best not to attempt to turn the machine once it has started down a timber ramp. If possible, leave the steering jaw clutches and traction clutches fully engaged and control the travel speed by means of the engine throttle and keep moving at a constant speed so that the machine will travel straight down the ramp.

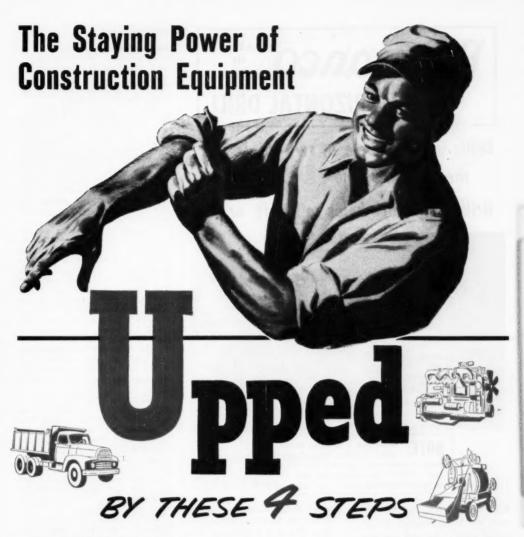
- Rotating machinery—The operator and his oiler should have a definite understanding as to procedures during lubrication and machine adjustments, so that neither will engage a clutch while the other is working on a part of the machine. The oiler should ask the operator to stop while lubricating dangerous areas. Then the operator must not resume operation without a definite all-clear signal. The oiler should not get underneath the machine without first advising the operator. Screen off rotating parts as much as possible.
- Tipping of excavators—Excavators will operate and travel on steep slopes. It may be unsafe to swing a machine to the side when there is no boom attached, especially when the machine is equipped with maximum counterweight and narrow crawlers, as it might then tip over backwards. It is possible to tip the machine with the boom elevated to a high angle with a load near the boom point and then either suddenly start or stop the swing motion.

Inertia of load to swinging forces high above the machine base cause it to tip. It is not safe to add more counterweight than recommended by the manufacturer because it may reduce backward stability too much and will add lifting capacity, reducing the safety features built

into the crane.

In carrying a heavy load, the load may oscillate out beyond its safe operating radius when traveling over uneven or soft ground. In swinging the machine with a heavy load—with the machine on sloping ground—the load may be at a safe radius on the uphill side but could tip the machine when swung to the downhill side, if the boom is not raised to compensate for the changed radius. Such lifts should be tested by swinging the

(Continued on page 90)



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NOTE: Auger rack a Parmanco feature which saves on drilling time. Augers always handy on machine as it is moved from hole to hole. Four individually adjustable leveling jacks for faster set up and smoother drilling.

 Speed, accuracy, and mobility make this newly designed drill of special value in cost and time savings. The 40 h.p. engine with four drilling speeds makes possible the reduction of footage time by one third.

Here is greater speed in retrieving augers. Also among the numerous design features are four rotating speeds and reverse for drilling and cleaning the hole. New design includes traction drive with both forward and reverse. The drill is equipped with self-starter and generator, dual type front wheels standard equipment, and truck type rear axle with hydraulic brakes.

Automotive steering as per illustration is optional. This hi-speed horizontal drill with greater horsepower than ever before is designed to fully meet all requirements of the construction field.

PARIS MANUFACTURING CO.

PARIS, ILLINOIS

EARTHMOVING . .

Continued from page 88

load close to the ground. The ground may be soft and give way, causing the boom radius to increase and tip the crane.

Shovel, dragline and hoe attachments seldom tip a machine unless the operator pulls the machine past its stable operation position. Shovels operating on steep ramps may tip if the loaded dipper is swung to the low side of the machine. If by any chance a clutch should stick while digging, the operator must quickly release the engine clutch to prevent possible overturning.

If a crawler crane load is heavy and unknown, the crane stability should be tested by barely lifting the load from the ground from the least stable position, which usually is over the side at a radius of about 11/4 times the maximum actual lift radius. For example, if the actual maximum lifting radius is to be 24 ft, the unknown heavy load could be tested by balancing it just off the ground at a radius of 14x24 ft, or 30 ft. If the crane will barely suspend the load at 30 ft, the load will be approximately the safe lifting capacity rating at 24 ft.

All crawler cranes are rated to lift 75% of the tipping load on firm, level surfaces; rubber-tired cranes are rated to lift 85% of the tipping load. Rubber-tired cranes lifting on tires or outriggers usually are more level and need more solid footing than crawler cranes. An unknown load might be tested at a radius of only 1½ times the maximum desired lifting radius for that load.

These tests also can be made by lifting the load clear of the ground and booming out until the machine begins to tip. A crawler crane is considered to be at tipping when the track rollers are free of the track, but most of the tread should still bear on the ground.

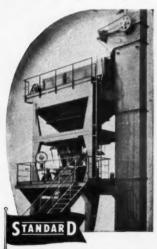
Tipping point of a rubber-tired crane over the side on outriggers is more difficult to determine because the load transfers so gradually from tires to outriggers and tipping is reached only when all except the steering tires are clear of the ground, with nearly all of the load on the outrigger beams.

For safety, never extend these outrigger beams more than recommended by the manufacturer because of the danger of twisting the truck frame or bending the out-

riggers. The safe lifting radius is then 80% of tipping radius for a crawler crane or about 90% of tipping radius for a rubber-tired crane.

- Cave-ins When shovels are digging against high banks or quarry faces there is danger of slides or cave-ins partially burying the machine. If the crawlers are at right angles to the bank the operator can start backing away if a slide starts. If the crawlers are parallel to the bank, it is difficult to get away. Pull the machine away from a bank during shutdowns.
- Shutting down—Lock cab doors so that unauthorized persons or children cannot tamper with the machine or release the brakes when it is unattended. High crane booms are usually at least partially lowered and ratchets set. Buckets or dippers are rested on the ground. Swing brakes must be locked on cranes and draglines. Traction brakes and pawls must always be set.

Ed. Note: The fifteenth article in this series will appear in the March issue.



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THE CLEVELAND TRENCHER CO.

February 1952 — CONSTRUCTION Methods and Equipment — Page 91

Puts a River in its Place



Four International crawlers help build wall to save town and mines from Ohio floods

Three times in five years the Ohio River rampaged through Rosiclare, Illinois. Each time it flooded the great fluorspar mines there, the biggest in the world, America's most important source of this vital fluxing agent used in making steel.

J. D. Barter Construction Co. was given the job of taming the river with a \$360,000 flood wall. Four out of the five crawler tractors he put on the project are Internationals, and Sam Barter tells why:

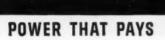
"They really do a job, that's why! And they

can take it as well as dish it out. We have one TD-18 with 3,000 hours that's never been touched. A TD-24 with 1,500 hours and not one minute's downtime."

Check with your own friends who own International crawlers. And ask your nearest International Industrial Distributor for details on the whole International line. He's always at your call with expert service both in his shop and at your job site. Get the low-down. You'll go International from then on in!

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SWIFT CURRENT of Columbia River kept sucking fill out of bottom of circular cells at Chief Joseph Dam until stopped by building extra



OUTSIDE COFFERDAM, tubular steel frames support sheeting of blister wall. Frames are spudded into holes drilled in river bottom.

Blister Wall Protects

THE CELLULAR COFFERDAM at Chief Joseph Dam on the Columbia River in Washington was in trouble last summer: high, swift water was sucking out fill from the bottom of the sheet-pile cells, which had been founded on practically bare uneven rock. But the main-dam contractors, Chief Joseph Builders, developed a protective system that held the cofferdam in place. The scheme involved prefabricated pipe frames spudded into the rock bottom and sheeted with steel piling to make a diaphragm, or blister wall, along the river side of the cells. Then the space between was sealed with bagged concrete and rock to prevent further scour and retain cell backfill.

The river bottom in this stretch of the Columbia (about 50 mi below Grand Coulee Dam) is composed of irregular bedrock only partly covered with a thin mantle of overburden. The sheet-pile cofferdam cells had been set on this irregular bottom and were backfilled with free draining material from near-by excavation.

During high summer flows, water depth reached 40 to 50 ft; velocity was as high as 35 fps; and flow exceeded 300,000 sec-ft. As a result, through "windows" under the piling, the current sucked at the fill within the cofferdam cells. Rocks as large as 9 in. were inadequate to seal these windows. The cells would lose as much as 100 cu yd of fill at a time, so equipment had to be kept ready around the clock to make replacements. Over a month's time, some 8,000 yd of fill had to be replaced—one cell losing 2,600 of its total 6,000 cu yd. Finally, pumps within the enclosure



sheet pile diaphragm wall on river side. Bagged concrete and rock seal on bottom of river between diaphragm and cells retains cell backfill.

Chief Joseph Cofferdam

were stopped and the water level allowed to rise, equalizing the pressure on the cofferdam's cellular wall.

The cofferdam had been built by another construction outfit under a separate contract with the Corps of Engineers. Thus its integrity was the responsibility of the Corps rather than Chief Joseph Builders. However, the latter was given the contract to repair the cofferdam, and sublet the work to Carl Tavares. The Corps, after conferring with Tavares and Harvey Slocum, consultant to the dam builders, reached a decision to construct a 325-ft blister wall outside the river arm of the cofferdam.

This flanking blister was made up of five pipe frames, each 64 ft long and 48 ft high. They were set in the river, tangent to the cofferdam cells and standing between cell centers. Every main frame was fitted with three smaller triangular frames for alignment purposes. Main members of the large frames were 12-in. pipes 12 ft apart, and to these were welded half-sections of sheet piling to guide others later.

After a prefabricated frame was lowered into place outside the cells by crane, 10-in. pipe spuds were put down through the 12-in. verticals into holes drilled 4 ft into the river's rock bottom. The frame was then welded to the cells with 6-in. dia bracing studs. Where adjoining frames met, a slotted 6-in. pipe welded to the 12-in. vertical of one unit fitted down over a 4-in. pipe welded to the next frame. This formed a dumbbell connection to hold the units together.

Next, a line of 15-in. sheet piling was threaded



INSIDE COFFERDAM, photo shows how some of cells cented when undercut on river side. Once, hole had to be flooded to save wall.



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CHIEF JOSEPH COFFERDAM . . . Continued

on to the guide sheets previously welded to the frames' verticals and dropped into place to make a continuous wall. Pipes on the framework served as horizontal walers to support the piling.

With the sheet piling in place, concrete in bags was dropped down a 30-in. torpedo tube 45 ft long into the space between the blister wall and the cofferdam. The bags were piled in this fashion to a depth of 3 to 6 ft, then a diver arranged them to assure proper sealing. On top of the bags was laid a layer of heavy rock.

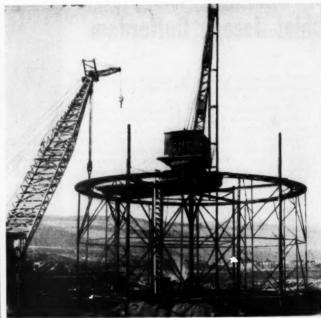
The blister proved substantial enough to give the cofferdam the protection it needed. Thus, the cofferdam could be dewatered and concrete work started. Concrete overflow sections could be brought up to el 755 with a minimum of 5 ft of concrete, and non-overflow sections to el 850 from a base of el 745. All this was done before

cold weather set in, in preparation for high water next spring. Schedule called for 250,000 cu yd of concrete by last December 1. Expenditure for the cofferdam protective work amounted to some \$300,000. But this is a bargain as compared with the \$2,000,000 expenditure that winter concrete operations would have involved.

Chief Joseph Builders hold a \$26,772,134 contract for secondstage construction work. The firm is a joint venture consisting of L. E. Dixon Co., San Gabriel, Calif.; The Arundel Corp., Baltimore, Md.; Hunkin-Conkey Construction Co., Cleveland, Ohio; and American Pipe & Construction Co., South Gate, Calif. W. N. Evans is project manager for the contractor.

The project is under the jurisdiction of the Seattle District Corps of Engineers, Col. John P. Buehler, district engineer. C. H. Wagner is resident engineer.

How Chief Joseph Cofferdam Was Built



ORIGINAL COFFERDAM CELLS at Chief Joseph were built around 63-ft dia templet mounting a pile driver. Sheets could not penetrate rock bottom, so frame held them until interior fill was dumped. Main center post is 12-in. pipe, four 10-in. pipes support circumfarence and also act as spud wells, steel channels form upper and lower circles. With templet held by spuds in holes drilled into river bottom, sheet piles were set around it and fill dumped into cell to water level. As fill rose higher, templet was raised in 6- to 8-ft jumps and finally removed for use in next cell.



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The capacity range of this B-G Paving Plant has proved to be the most practical for a broad range of users. Output is high enough to supply materials for average-sized new construction and resurfacing jobs—investment is low enough to assure profitable operation at minimum capacities, or for intermittent operation.

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Bituminous mixes of all types are produced at lowest cost with this B-G Plant. This includes the full range—all temperatures, all gradations and all binders. For "high-type" mixes, the aggregates are blended at the feeding end. Quality and uniformity are consistently high.

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Each basic unit of this plant-Mixer and Dryer-Dust Collector—is mounted complete on its own trailer-type pneumatic-tired chassis. Built-in hot and cold elevators and dryer stack fold down for transport. There is a minimum of dismantling—the plant can be moved and readied for work in new locations in a few hours' time.

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No special erection equipment is needed to set up a B-G Paving Plant. No excavation or footings required. Units are spotted in place by truck, adjustable jacklegs are lowered to ground level, and the plant is ready for oper-ation once the required auxiliary equipment is in place,

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The B-G Model 840 Paving Plant is easy to maintain. All moving parts are quickly accessible for inspection and adjustment. B-G Distributors offer fast emergency parts service, and are staffed with factory-trained experts to help you keep your B-G Paving Plant at top operating efficiency.

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Simple to understand and to operate, the B-G Paving Plant eliminates the human element in producing a consistently uniform mix. Once the bitumen and aggregate proportions have been set, they cannot vary as the positive displacement pump and aggregate apron feeder are positively interlocked. Proportioning is continuous, automatic and accurate.

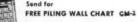
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Foster Piling Rental Service is assuring 17 major contractors of getting their piling on the job sites in advance of work schedules. In constructing such a tremendous traffic artery, countless troubles of every nature turned up; and thus Foster was the one dependable source to turn to to obtain the exact lengths and exact sections of steel sheet piling that each job required. When "man-made" problems are continuously encountered as in this job - and when major obstacles come up such as crossing the New Jersey tidal flats, you must be able to count on prompt dependable deliveries and Foster carries the largest Rental Piling Stocks in the country all lengths and sections - in all standard makes.

With complete piling stocks in five nation-wide warehouses, plus numerous field stocks—Foster can service your every piling need with the exact lengths and exact sections of interlocking steel sheet piling—all makes and all types. You can always count on dependable delivery "FASTER FROM FOSTER"—and the low rental rates give you an added advantage in competitive bidding. Also available for immediate delivery from Foster: Rental Lightweight Corrugated Steel Sheet Piling, Pile Hammers and Pile Extractors.



A valuable reference guide fully illustrated with tables, diagrams—pertinent facts and figures on all standard makes (all sections) of steel sheet piling, corrugated lightweight piling, pile hammers and pile extractors. Along the 118-Mile New Jersey Turnpike

This \$220,000,000 New Jersey Turnpike, consisting of two parallel roadways separated by a wide center-strip, will extend from the George Washington Bridge (which connects Jersey with Manhattan Island) to Deepwater, N. J., a distance of 118 miles. These Contractors are using Foster Rental Piling:

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BASE RADIO STATION with antenna on steel tower has a range of about 20 mi, is located at field office. Truck-driver has just received a request to pick up a tractor-dozer.



PROGRESS OF PILE-DRIVING EQUIPMENT is checked over the field office two-way radio by Tom Gatens, project foreman for George M. Brewster and son, Bogota, N. J., contractors.



MOBILE SHOP carries single-package two-way radio. In case of an equipment breakdown, truck goes immediately to point where repair is needed—sped through the quick exchange of messages.

Contractors Minimize On-the-Job Delays With Two-Way Radio

By DALE SAMUELSON, Communications and Electronics Division, Motorola, Inc.

CONSTRUCTION JOBS frequently are spread out over a large area. Sometimes equipment is strung along for miles and at some distance from the base of operations. Operating efficiency—on which hinges a contractor's success—oftentimes is not of the best under these conditions.

Fortunately, high-speed communications have come to the rescue and, for a relatively low cost, are making it possible to manage bigjob operations as effectively as though the work were more concentrated.

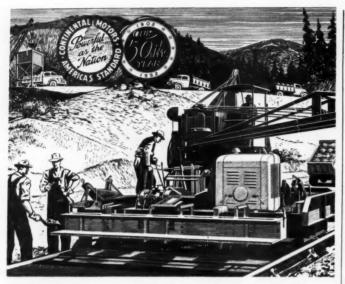
Two-way radio is becoming standard equipment with more and more construction companies. Communication by radio is well worth while for all types of construction projects except for the small compact job where practially everyone is within earshot of the boss. It it is just as useful during construction of a multi-story building as it is in the building of a big dam, laying of a large spread of pipe line or the construction of miles of super-highway.

Radio has shown that it can be a useful ally in keeping equipment busy on the job and maintaining a high utilization factor. On large projects the cost of two-way radio communications is almost negligible when compared with money invested in heavy equipment such as shovels, tractors, earthmovers and pile-driving equipment.

An example of the value of good communications for far-flung operations is construction of the New Jersey Turnpike, opened to traffic over its full length last month. Grading began in mid-1950. The completion date set for the 118-mi superhighway was November 1951. So it was apparent that contractors would have to maintain a record pace to meet the schedule.

A pioneer in the use of radio to coordinate field operations is George M. Brewster and Son, Inc., of Bogota, N. J. Brewster placed his first order for Motorola communications equipment immediately after being awarded a contract for two 20-mi sections of the turnpike in May, 1950.

Almost simultaneously, radio equipment orders were placed by four other turnpike contractors: Savin Construction Corp., Villa Contracting Co., Inc., S. J. Groves and Sons Co. and Grandview Con-



Speed the Job . . . and Cut the Cost . . . with DEPENDABLE RED SEAL POWER

Continental Red Seal power is saving money for owners of specialized equipment used at every stage of highway construction, maintenance and repair, from preliminaries on through final grading.

You find Red Seals of varying sizes and specifications in more and more leading makes of shovels, cranes, conveyors, draglines, winches and pumps at the pit; in trucks hauling materials to the job; in mixers, trenchers, earth-movers, spreaders, rollers, and other machines at the job site. They deliver their full work quota at lower cost, with less down time, because each is engineered expressly for its job—built to do one thing and do it well.

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Continental Motors Corporation
Muskegon, Michigan

TWO-WAY RADIO . . . Continued

struction Corp. A total of ten base dispatching stations and more than 40 mobile units was employed.

The first field office stations, KEB 508, was put in operation by Project Manager A. J. Seaman near Burlington as the control point for section 3 of the turnpike. The station provided instant communication with all radio-equipped mobile construction vehicles within 20 mi.

Another base station was installed at Secaucus where the antenna was located amid many high-power broadcast and television stations on the New Jersey flats. It was bombarded literally by thousands of radio signals from the many mobile systems in the New York metropolitan area, yet because of the major advances in the design and engineering of two-way radios, off-channel interference was no problem.

Radio Widely Used

The type of radio equipment used by these contractors has been used to coordinate and accelerate other construction activities, both public and private, for a number of years. It also is used by state highway departments, utility districts, public utilities and other groups to coordinate maintenance work on projects when they are completed.

Anyone on the job who drives a car or truck equipped with twoway radio virtually never is out of touch with his field office. If he walks and carries a portable twoway radio he has the same advantages.

Often it is impossible before starting out on a job from the field office to know precisely what needs for materials and equipment will be encountered. Without an immediate, easily accesible means of communication, much time is lost either getting to a telephone to call for someone to bring out the required materials and equipment, or driving back to the office or company pool to obtain them.

On a construction job where traveling is a portion of the day's activities, anything that will cut down on travel time of trucks and other equipment will be an economic advantage that will easily pay for itself and leave more hours to accomplish the job at hand.

Where operators of trucks and other vehicles formerly had to return to the office for additional equipment or for further orders, two-way radio makes it possible to continue working while the equipment is brought to them from the pool. And they can move directly from one job to another. When advice or further instructions are needed, a man can contact his superiors, wherever they may be, to get an immediate answer.

Many types of static-free f-m (frequency modulation) two-way radios may be purchased, but all of them fall into three general categories where they can be classified for clarity. These are: portable sets; mobile units; and base stations.

Included in the portable equipment are such hand-carried transmitter-receiver units as pack sets and handset radiophones. These radios usually are small, compact units weighing from 10 to 20 lb. Motorola's Handie-Talkie portable radiophone, for instance, incorporates a regular French-phone handset like the one used with telephones. Other manufacturers have somewhat similar sets. Range between two such radios is a mile or more depending on the terrain, and up to 60 mi between a unit in an airplane and another on the ground.

Portables of this type can be purchased with self-contained conventional dry-cell or rechargeable storage battery power packs. In a typical portable, either type of primary power source provides a minimum of 8-hr operating time without recharging or replacing the batteries. In most applications the sets are transmitting only for a few seconds or minutes at a time, therefore can be used for extended periods without changing or charging batteries.

Loud Speakers Useful

Pack sets are the larger type of man-carried portable units and have a longer life power-pack. A pack set with a military palm-type mike and semi-directionel loudspeaker is particularly valuable when it is desired by a supervisor to talk to a whole crew at one time from a distant point. The unit can be set on the ground and incoming messages reach the men without their having to take time out to pick up a receiver to hear. When anyone calls the crew over the two-way pack set, the receiver. audio circuits automatically turn on, and all who are in audible range can hear the message.

Power supplies are available which make it possible to operate the pack set on 117 v ac when in



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WET JOBS

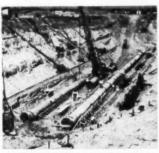
#2 of a series

CHAIN OF ROCKS CANAL

Contractor: River Construction Corp.



START: LOWERING WATER to prepare for relocation of existing 54 in, water line below future canal bottom. (Upper Mississippi River, Ill.)



10 WEEKS LATER: Pipe being laid 38 ft. below original water level, while 3-stage Griffin Wellpoint system maintains dry subgrade.

Surprising, isn't it?—this high-speed progress compared to yesteryear's outmoded operations—cofferdams...months' delays...mountainous costs. Surprising, too, how much of wellpoint progress has been pioneered by Griffin through almost 2 decades. For "quick dry"...specify...Griffin.

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881 East 141st Street, New York 54, N. Y. Hammond, Ind. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
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TWO-WAY RADIO . . . Continued



BULLDOZER IS CALLED to clear a road for trucks being loaded in borrow pit by Frank Itro (left) as Joe Giberson listens in. Brewster is a pioneer among contractors in use of how-way radio.



PORTABLE PACK SET that operates on batteries out in the field can be plugged into a 117-y ac line for use around the office.

the office and on the 6-v dc vehicle battery when driving a car, truck or other mobile unit.

When two or more crews are working on a project or moving from place to place where there are no permanent communication channels, two-way radio becomes an extremely valuable tool. Time saved in walking or driving back and forth to coordinate the crews' activities leaves more time for productive work. Portable radio-phones and pack-sets are used primarily to coordinate activities within the immediate construction area.

Mobile units are those two-way radios built for installation in automobiles, trucks, scrapers, loaders and other types of vehicular equipment. Sets are powered directly from the vehicle's storage battery and usually have a transmitting power of anywhere from 10 to 60 w. The higher the power, the greater the communication range possible. Portable units also can be used in moving vehicles.

Base stations are radio units installed permanently at one point, usually in the central or field office, and generally have a specially built, elevated antenna—on a building roof, pole, or antenna tower.

The use of two-way radios for construction operations falls into the Federal Communications Commission category of "industrial" application and is described in Part II of the FCC rules and regulations. (Copies of "Rules Governing Industrial Radio Services" are available from the government printing office for 10c each).

Authorized channels for this classification are in the Very High Frequency range where transmission characteristics for all practical purposes follow line-of-sight paths. As a result it is important that a central transmitting and receiving station be located on either a high point, or have an antenna high enough to remain in visual distance of the largest area possible.

With a 60-w transmitter at the base dispatching office, communications should be possible with a radio-equipped mobile unit 20 mi

(Continued on page 105)

they're custom-built to fit the job!





Lightweight, high-speed Diesels (50-550 hp) for these and many other uses









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See for yourself; ask for a demonstration. Worldwide Sales and Service. BARCO! BARCO MANUFACTURING COM-PANY, 1812C Winnemac Avenue, Chicago 40, Illinois, In Canada: The Holden Co., Ltd., Montreal, Canada.

AREA TAMPING On high degree specified compaction with 12" to 20" lifts, the Barco Rammer will cover from 1 to 11/2 square yards of surface per minute. This means 20 to 30 cu, yds, of fill per hour, or 160 to 240 cu, yds, per 8 hr, day per Rammer



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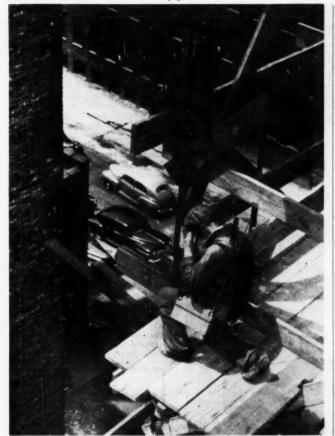
Barco has cost data, available to conparco nus cost gara, granulure to soit. tracturs, covering actual production figures and costs, including charges for depreciation, interest, insurance, taxes, aepreciation, interest, insurance, taxes, fuel, repairs, and labor. Details on request.

One Man Operation! SAFE, Easy to Use!

ARCO "Pegson" Gasoline

For Soil Compaction Close to Walls, Culverts and Abutments - in Trenches, Ditches

FREE ENTERPRISE - THE CORNERSTONE OF AMERICAN PROSPERITY



BUILDING CONSTRUCTION often can be speeded considerably by putting a portable radiophone on the job. This Motorola Handie-Talkie mounts an integral whip antenna and has a convenient shoulder strap. Units like this weigh from 10 to 20 lb.

or more away. This depends upon intervening terrain and relative antenna height.

All radio reception is dependent upon three factors: (1) Receiver sensitivity; (2) transmitter power; and (3) relative antenna height.

Receiver sensitivity is essentially equal for mobile, fixed (base station), and portable receivers of a given frequency. Transmitter power required is determined by communication engineers' survey tests made over the terrain to be covered by radio signals.

One of the most important factors is that of antenna height, for antenna height above the surrounding terrain is practically synonymous with transmitter power. As antenna height increases, so does the system's maximum range. Perhaps one of the best examples of antenna importance is that of the Handie-Talkie radiophone mentioned previously. Between two of these units the maximum range over level terrain is probably 2 mi. Between an airplane and ground, using identical units, communication distances of 60 and 70 mi have been realized. The airplane altitude tremendously increases the line-of-sight distance necessary in high-frequency radio communicacation systems.

Costs of two-way radio equipment vary with the type of equipment and quality desired. Because systems must be designed specifically for an individual customer's requirements, costs vary greatly. Individual portable units generally run somewhere in the range of \$250





No wrestling with heavy levers . . . a finger touch controls hoist, swing, travel, etc. It's a cream-puff job with W A B Air Controls.



Operator fatigue doesn't cause "afternoon slump"—equipment delivers to capacity all through the working day. Cushioning action eases strains, reduces maintenance.



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RIGGS & STRATTON single-cylinder, 4-cycle, air-cooled gasoline engines are the "Preferred Power" leader — on equipment, machines, tools, appliances used by the transportation, construction, oil-fields and other industries — and on farms. Briggs & Stratton Corporation,

Milwaukee 1, Wisconsin, U. S. A.

In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

TWO-WAY RADIO ...

Continued

to \$400 each, mobile units are usually about \$350 to \$700 each and base stations may cost from \$700 to \$2,000. Cost depends entirely on the needs of the customer, the quality, range and elaborateness of the system and special problems that must be met.

Technical details involved in designing a radio system to give maximum benefits to a construction company are not difficult problems that must be faced alone by the contractor. It is part of customer service of all reliable radio manufacturers to handle and solve the technical problems as well as to take care of the paper work and other requirements of the FCC in order to get the system licensed.

When quality two-way equipment is purchased, maintenance costs will be low. No serious trouble should be encountered for many years. Many operators have found that they can make contacts with near-by communications engineers to maintain the units at a fixed fee which includes costs of parts and services. Most radio maintenance men who service transmitter - receiver units have such contracts.



this SIMPLICITY pays off for you





1. Cover Plate

PUMP LIFE



MORE ECONOMICAL OPERATION

HIGHER SUSTAINED EFFICIENCY

The story behind the great performance of the Rex* Self-priming Centrifugal Pumps is simplicity itself. The fact is, Rex is the simplest self-priming centrifugal pump ever built. There are only 6 basic parts—the cover plate (1)—the adjustable air peeler (2)—the impeller (3)—the wearing plate (4)—the pump body (5)—and the leakproof seal (6).

For you, this extreme design simplicity has great advantages:

You get LONGER PUMP LIFE . . . fewer parts mean less wear.

You get ECONOMICAL OPERATION . . . fewer parts to maintain . . . all parts except stationary part of seal can be inspected, maintained or replaced without touching the engine. All this means less chance for trouble . . . far lower maintenance cost . . . more gallons of water pumped per gallon of fuel and per dollar of cost.

You get SUSTAINED EFFICIENCY . . . this pump is designed for quick, easy replacement of all wearing parts to restore new pump efficiency.

For all the facts see your Rex distributor or write for Bulletin 51-27. Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wis.

DON'T FORGET THESE OTHER IMPORTANT REX ADVANTAGES

High PORTABILITY

All parts EASILY ACCESSIBLE

REPLACEABLE WEARING PLATE

PATENTED ADJUSTABLE AIR PEELER which means new pump priming efficiency for the lifetime of the pump.

Combine them all with the basic Rex design simplicity with all parts readily accessible, and you have a pump that assures you years of low-cost, trouble-free service.





CONSTRUCTION MACHINERY

Buch contractors barrows

One of the most popular barrows made by Buch. It has a 4 cu. ft. capacity and is the practical barrow for handling all types of wet or dry loads. Tray is deep-drawn from a single sheet of 15 gauge sheet steel with rolled over edges rein-forced by 1/4" steel rod. If desired, it may be obtained with prime hardwood handles instead of tubular steel. (154)



Just about the strongest barrow ever made. Its 5 cu. ft. capacity tray is made of 16 gauge sheet steel, lapped and riveted at corners. Its edges are turned over 4" steel rod for extra strength. Barrow is 26" wide and all seams are welded. This model, too, is available with wooden handles as well as the tubular ones shown. (155)

These are just two of the specially designed contractors barrows found in the complete Buch line. Write, today, for our latest catalog which pictures and describes it in full detail.



BUCH MANUFACTURING COMPANY ELIZABETHTOWN, PENNA



Want Lower Bids?

Contractors everywhere save up to \$7.00 per thousand in brick-handling costs with BRIK-TOTER. They're saving time, reducing injuries, eliminating the old-fashioned, back-breaking job of moving bricks, tile, roofing, nails by hand.

BRIK-TOTER . . . the lightest (385 lbs.), strongest, most versatile portable conveyor . . . especially designed for masonry materials . . . pays for itself in just 50 hours. Set it up wherever you want. You'll find new uses daily. Gas and/or electric drive. Operation, construction and parts guaranteed. Write for cost-saving BRIK-TOTER Bulletin. Dealer inquiries invited.

Write for name of your nearest dealer.

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Legal Decisions Concerning Construction

Changed—Without Leaving a Trace

"HERE'S MY CHECK for that \$600 I owe you," A announced, B accepted the check, A departed, and came back inside of five minutes.

"I've got the cash in my pocket, and you might as well take it and tear up the check," A declared. B accepted the cash, pulled a blue slip of paper out of a wire basket, and tore it up.

Ten minutes later A came back

'You're sure that was my check

you destroyed?" A asked.
"Absolutely," B assured him, but A took no chances, and gave the bank a stop pay order.

That afternoon B presented the check for payment, the paying teller got the check into his hands and wrote "payment stopped" across its face.

"You got the cash for that, and you can't fool anyone with it now," the teller declared

"Well, I'm entitled to the check," B maintained, took the check back to his office, erased the teller's notation, leaving no trace, endorsed the check to the contractor who took the check in good faith and with no knowledge of any defect therein.

The bank, of course, refused to pay the check, and the contractor sued A in the Idaho Courts.

"However innocent A may be, it was his fault that the check remained in the possession of B both before and after the erasure. It was his negligence in not requiring the return of the check, after he had returned the consideration for which it was issued, that resulted in the negotiation of the check to the contractor. As between A and the contractor, under the facts, the loss should fall upon A, for it was he who caused the loss," said the Idaho Supreme Court, in ruling in the contractor's favor in Wade Bros. vs Bybee reported in 229 Pac. 662.

The Bankrupt's Note

"I AM INCLOSING herewith your bill, which is long past due. Kindly let me have payment for the same, in order that I may mark it off my

books, and greatly oblige," the contractor wrote.

"As you are well aware, I made an assignment in bankruptcy several years ago, and obtained a full discharge from the Court which paid all my debts," the owner wrote in reply.

"I am well aware of your discharge in bankruptcy, but it does not pay your debts, and an honest man will settle his debts no matter how many discharges in bankruptcy he has. Believing that you answer that description, I am inclosing herewith a note for the amount of the bill, which will give you some additional time, and if you want to do what is right, you will sign and return the note," the contractor's answer read. The owner signed the note, failed to pay, and the contractor sued.

"As the maker of the note had obtained a discharge in bank-ruptcy, he, therefore, received no value, and the note cannot be collected by process of law," the owner's lawyer argued, but the Arkansas Supreme Court in the case of Fonville vs Wichita Trust Co., 255 S. W. 561, ruled in the contractor's favor.

"The plea of lack of consideration presented no defense, for, according to all of the authorities on this subject, a discharge in bankruptcy only serves to wipe out the remedy, but leaves the debt as a moral obligation, which is sufficient to serve as consideration for a new promise to pay the debt," was the ruling of the Court.

The "Unfair Competition"

"YES, YOUR PRICES are all right, and I'll buy from you if you'll agree not to sell to my competitor across the street," the contractor agreed.

"No, I can't do that," the seller answered, "and more than that, your refusal to buy from me except on those conditions is 'unfair competition' and you're laying yourself liable to prosecution under the Federal Trade Commission Law."

"Well, I'll take my chances on that," the contractor retorted.

The contractor was quite safe, as the United States Circuit Court of Appeals in Raymond Bros. vs Federal Trade Commission reported in 280 Fed. 529 has ruled that the refusal of A to buy goods from B unless B will agree not to sell to C, is not "unfair competition" within the meaning of the law.

"A buyer has the right to select



A nose dive

that might have left us up in the air...

(based on actual Hartford Loss, File #H-20072)

It was a steep incline—about 30 degrees. Almost up, my motor stalled and I suddenly lost my air. With no brakes, no gears, me and that earth-mover back-tracked fast. I hit a bump and went flying. The rig "sashayed" completely around, and started high tailing downhill, headfirst. But the bucket caught. This drove the machine's nose deep into the dirt. And caused enough damage to leave the boss up in the air for \$1461.39 . . . except that he had a Hartford Contractors' Equipment Policy that got things fixed up quick with no trouble or expense to him.

Who'd have paid this \$1461.39 repair bill if this had been your machine?

Not you! Not if you had Hartford Contractors' Equipment Insurance. And your Hartford agent working with the company to see to it that your claim is paid promptly and fairly! Your equipment investment is a big one. Get your Hartford agent or insurance broker to protect it for you...properly. In more than 5000 communities, you can locate your Hartford Fire Insurance Agent by calling Western Union by number and asking "Operator 25."

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Highway base, secondary road or black top drives—Lay them at less cost



Designed to meet the need of both large and small contractors and highway departments, this low cost spreader lays many types of materials, in a wider range of widths and thicknesses, with the accuracy required for highway, street and airport base and both the base and top of secondary roads, parking lots and drives. Crawler or 4-wheel traction is on subgrade to avoid displacing loose material. Straightedge runners control level of strike-off. Blends joints; can lay flush to curbs, headers. Two models, to work with all size trucks.

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LEGAL DECISIONS . . .

Continue

any particular merchandise which he wishes to buy. He has the right to do this for any reason satisfactory to him, or for no reason at all," said the Court of Appeals.

Overseas Banking

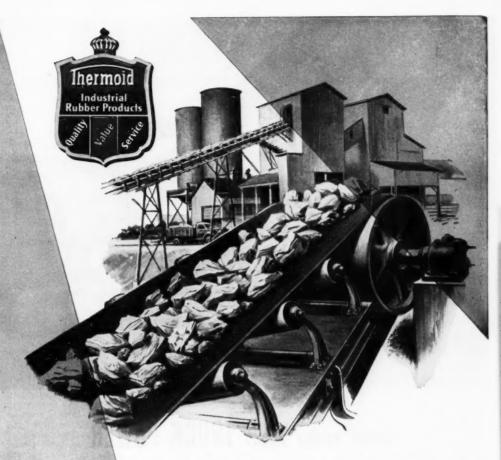
THE NEW YORK CONTRACTOR bought certain goods from a European seller, the seller drew two drafts for the purchase price, payable to a Paris bank. The Paris bank endorsed the drafts for collection to an Italian bank and the Italian bank forwarded them to its New York agency.

When the New York agency presented the drafts for acceptance, with the bills of lading and insurance papers attached, the contractor refused to accept on the ground that the consular invoices were not attached. The Italian bank was notified of this refusal, notified the Paris bank, the Paris bank notified the seller, and the seller assured the Paris bank that the required invoices had been mailed direct to the contractor.

"Consular invoices addressed direct drawee," the Paris bank wired to the New York agency of the Italian bank. The New York agency showed this cable message to the contractor, the drafts were paid, the proceeds remitted to the Paris bank, and paid over to the European seller. Then, when the goods did not arrive, the contractor ascertained that the supplies had never been shipped, that the bills of lading were forged and that no consular invoices had been sent.

Then the contractor sued the Paris bank in the New York courts for the return of his money and won, as reported in 214 New York Supplement, 366 as Archibald & Lewis Co. vs Banque Internationale de Commerce.

'The Paris bank might have protected itself by cabling the truth in its cable, and inserting the words 'shipper stated' before 'consular invoices addressed directly drawee.' It did not do so. On the contrary it sent a message, the contents of which repeated by its agent, the Italian bank, to the contractor, reasonably led the contractor to believe the Paris bank itself had the consular invoices and had mailed them directly to him, or that the Paris bank had personal knowledge of the mailing of the consular invoices," was the reasoning of the court.



"Whatever Your Conveyor Belting Problem . . . Thermoid Has The Answer"

Whatever the job—whatever the nature of the materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—there is a Thermoid belt built to do the job at the lowest cost per ton of material handled.

Thermoid belts are made with an extra margin of endurance. You will find they stay on the job long after ordinary belts fail. With Thermoid, you will have fewer delays due to belt breakage or premature wear. Your Thermoid distributor will be glad to help you with your requirements.

Here's The Book That Will Answer Many Of Your Questions

Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled...how to determine capacities, speeds, weights and number of plies.

Conveyor & Elevator Belting - Transmission Belting F.H.P. & Multiple V-Belts - Wrapped & Molded Hose



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Sound advice about TRUCK POWER

When you're sweating to get a rugged construction job done on schedule, you just can't afford to waste time with an underpowered truck—or one that's illfitted to its job.

That's why a Dodge "Job-Rated" truck is your best bet. It provides the kind of power that takes its job in stride!

Take a husky Dodge 2¾-ton truck, for instance. With Twin Carburetion and Exhaust System, its sturdy high-compression engine turns out 137 horsepower!

It's mighty dependable power, too. Scores of up-tothe-minute features result in low-cost operation, long life, and year-'round dependability. Consider, for example, such extra values as stellite-faced, sodium-cooled exhaust valves . . . surface-hardened bearing journals . . . intake valve and exhaust valve seat inserts . . . and others!

Add to all this the fact that there's a Dodge "Job-Rated" truck that's factory-engineered to fit your job and your power needs to a "T"!

So . . . why not get a truck that's designed especially to take sweat and strain out of your toughest jobs and put extra profits in. Get a Dodge "Job-Rated" truck! See your nearby Dodge dealer—soon.



What Can I Do About Safety?

...Ten Workable Suggestions From One Contractor to Another

By JOHN A. VOLPE

8. Property Damage Prevention and Public Safety

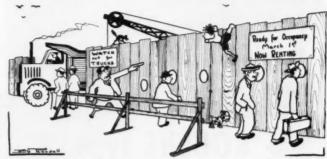
A NECESSARY PART of accident prevention is provision for public safety and prevention of property damage. Too frequently these items are not given much attention and indirectly cause much grief.

• For the new job, operations to be included in the job's progress are important check points. Check job plans for particularly hazardous operations. (Blasting, underpinning, shoveling) that may be necessary. Try to evaluate their effect on surrounding or adjoining structures or properties.

• The job site may present a possible source of loss through property damage due to poor location in reference to abutting or adjoining properties or structures. Such locations may require the contractor to work in close quarters. Exposures may be hidden as well as visible in the form of utility and service lines cutting through the site.

· Extensive use of reinforced concrete requires great amounts of wooden forms, panels, bracing and tarpaulins and other combustible materials, all of which create a potential fire hazard. During winter months there is the added exposure of salamanders and stoves. both in your shanties and those of subcontractors. Close supervision of these conditions is necessary to avoid the beginning of an expensive job fire. In addition, construction job fires often go unchecked because water lines are not carried up with structures, they are inadequate and no alarm system is in

• Every precaution should be taken to protect the safety and



"Adequate cautioning signs, barricades and fences should be constructed to protect the general public, as well as the numerous and unavoidable sidewalk superintendents. And don't forget to guard against inquisitive children."

property of the public. Adequate cautioning signs, barricades and fences should be constructed to protect the general public, as well as the numerous and unavoidable "sidewalk superintendents." And don't forget to guard against inquisitive children.

• In the case of large jobs, consider the huge amounts of material and heavy equipment which will be moved on and off the job site. This involves a vehicle problem which may interfere with or disrupt normal traffic in the area. Consideration should be given to routing vehicles in and around the job site and the possible need for uniformed police to direct operations.

• The quantity of used material on the average construction job is three times that of new material. Care and consideration by the contractor will avoid the common construction nuisances of poor handling and material storage which often damage property and bring injury to the public.

 You may not know that your coverage for property damage and public liability is rated by your experience, as is your compensation coverage. The better the job you do in property damage prevention, the lower your coverage rates

• Care and consideration make an impression on the public. Often we are required to work in a section where the citizens are hostile to construction outfits. Any steps we

can take to show these people we are interested in their welfare, too, may do much toward eliminating the institution of nuisance claims and feelings of antagonism against us. This saves money.

 Consider possible job changes in the initial figuring. Some jobs are plagued with changes which tend to increase or lessen the property damage exposure considerably.

• Examine your bid price to make sure that you haven't omitted expensive precautionary methods which become necessary if hazardous operations are present in the specifications. Don't put yourself in the position where inadequate or half-safe measures will be necessary because your price was too low. There is no saving in such ill-advised economy measures.

Maintenance of Adequate First-Aid Facilities

Many small accidents can become serious unless they receive proper attention; thus it follows that the maintenance of adequate first-aid facilities is a must on every job.

• Give immediate attention to injuries when they occur. When first-aid facilities are readily available, there is less temptation on the foreman's part to tell a man to go back to work and let a wound go

The first seven safety suggestions are discussed in the December 1951 and January 1952 issues of Construction Methods and Equipment. Suggestions 8, 9 and 10 in this issue conclude the article.



LARGE CAPACITY IN AN 8 FT. DECK WIDTH—LEGAL IN ALL STATES. 8 TIRES ON 2 ROCKING STUB AXLES WITH LEVEL OR DROP DECK IN 15, 20, 25, 30 and 35 TON CAPACITIES

By reason of its versatile adaptability to all kinds of heavy hauling jobs, the Rogers Type "T" has steadily increased in popularity.

It's a "natural" for small and large contractors and haulers. If you are considering the purchase of one or more trailers, by all means investigate the Type "T".

It packs powerful advantages in a multi-purpose single unit. Write for full details and catalog.



A worms-eye view of the sturdy rear end and frame construction of the famous "T".

The rear end design of the Type "T" has proved so efficient it has been adopted as standard construction in Rogers Power-Lift Detachable Gooseneck Trailers.





Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

SAFETY . . . Continued

until quitting time.

 It should be impressed upon all employees that cuts and punctures treated immediately rarely become infected.

• A certified first-aid man can save much time and money where the size of a job warrants one. There is a real need of "know how" when emergency first aid is required on a job that has no nurse or doctor. When an accident occurs, precious time is lost unless the first-aid setup is complete.

• Your insurance carrier stands ready to help you establish adequate first-aid facilities. The carrier will set up and supply your station and also may procure a qualified first-aid attendant or nurse.

• First-aid facilities on the job can make great savings in loss of working time by eliminating trips for off-the-job medical attention. On one large housing project in the Boston area a record was kept of



"Band-Aid bungling by unqualitied personnel treating wounds and cuts and disturbing seriously injured employees has been responsible for much time lost and unnecessary suffering."

all cases handled by the contractor's certified first-aid man. A conservative estimate shows that 25% of them would have gone to a doctor if an untrained person had treated them. When the average time lost in traveling for medical attention was figured (time paid by the contractor), a saving of more than \$200 weekly was realized.

• It does not take a large job to make a good first-aid man valuable. The cost of time lost in going to a doctor's office, plus the average cost of medical attention for nolost-time injuries, can build up to a considerable expense.

"Band-Aid-Bungling" by unqualified personnel treating wounds and cuts and disturbing seriously injured employees has been re-

(Continued on page 116)



says another 20-year user...

C. E. HOWARD, Carpenter Foreman, INGE-HAYMAN CONSTRUCTION COMPANY, INC. Dallas, Texas

"You certainly know tools after using them for as long as I have," says Mr. Howard, "and I've found SKIL Saws handle better because they're better balanced. They can take real punishment because they're better built. And you get greatest accuracy because you can see what you're doing with the SKIL Saw."

C. E. Howard (left) and J. W Coleman (right) at work on store construction in downtown Dallas, will house a religious book store.



SKIL Saw Model 77. One of 10 models, 714" SRIS. Saw Model 77. One of 10 models, 7% saw. Full base adjustments for 0" to 2%" vertical depth of cut; 0" to 45" bevel adjustment, 1%" depth of cut at 45", 3200 r.p.m, no-load speed. Over-all length: 17%". Weight: 15% ibs.

See your distributor for complete information or call your nearest SKILSAW Factory Branch.









SKIL products are made only by SKILSAW, Inc., 5033 Elston Avenue, Chicago 30, Illinois

SKILSAW Factory Branch Offices in 34 principal cities In Canada: Skiltools, Ltd., 3601 Dundas Street West, Toronto 9, Ontario



• Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 41/2 foot jaw

spread. Other capaci-

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STONE AND WOOD GRABS . CLAMSHELL, DRAGLINE, CUSTOM-BUILT BUCKETS

SAFETY . . . Continued from p. 114

sponsible for much time lost and unnecessary suffering. It must be impressed upon employees that they refrain from administering to the injured when they are not qualified.

· You can receive help from your local Red Cross Chapter which has organized first-aid instruction classes. It is worth the effort to send some of these permanent employees to these classes to have at least one certified first-aid man on each

of your jobs.

· First-aid supplies should be checked and maintained on each job whether there is a first-aid attendant or not. It is too late to order supplies after an injury has occurred. Here again, both your carrier and state agencies have prescribed regulations governing first-aid facilities. Unfortunately some of us fall far short of these minimum standards.

· A definite rule on the job should be that employees Get First Aid. First and report all injuries at once. Let's not be hit with any more of these "late reported" cases which usually have resulted in great expense before we are aware that they have occurred.

10. Cooperation and Contribution of the Insurance Carrier

There are many insurance carriers who provide worth-while facilities to contractors in connection with their accident prevention work. I believe that many of them do a splendid job, although others do just a mediocre job. In general, I think there is room for improvement.

The insurance carrier should submit a quarterly accident statement broken down by jobs and foremen, listing all accidents and indicating the compensation and medical costs. This would serve as a complete digest of the accident picture which could be reviewed by management in a few minutes and would show clearly where additional safety effort is required.

· A competent sales representative, as well as a safety engineer, should contact the chief executive (contractor) periodically in order that he be kept up to date in regard to his insurance costs and needs.

• These insurance representatives should sit down with management each year when new insurance

rates are promulgated. The record for the last year should be reviewed and the causes for the present insurance charge or credit explained in detail. In no better way can management be shown where its accident prevention efforts are lacking or inadequate.

• Formulation and administration of any safety program should be aided by the engineering department of the insurance company, utilized in an advisory capacity. Its experience in this field is wide and varied and can help in eliminating or avoiding the common pitfalls and breakdowns of unsuccessful programs.

• The carrier's safety engineers should inspect jobs periodically, according to job size. In this way they



"The carrier's safety engineers should inspect jobs periodically... management can be shown where its accident prevention efforts are lacking or inadequate."

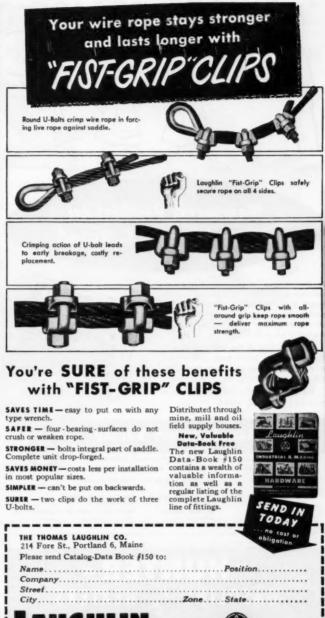
can check on the physical condition of the job and also rate your jobs in comparison with the many other jobs they service.

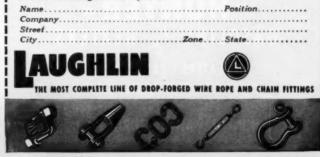
 To avoid serious mishap, the carrier's engineering department should work with you to advise and suggest safety measures to be taken when particularly hazardous or unusual operations are encountered.

• Insurance engineers contact many jobs and many contractors; serve as a clearinghouse for safety measures and methods. Usually they can come up with recommendations to simplify your safety problems.

• Insurance safety engineers often can give you a fresh viewpoint on out-dated methods which you have been using for years. Their views are not clouded by too close an association with your company.

• The carrier can be of great assistance when bids are being figured and insurance rates must be included, particularly out of state. For instance, our firm recently fig-







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Mixer "output" need no longer be an unknown quantity to architects, engineers and contractors engaged in the serious business of estimating concrete or determining the proper mixing capacity of a drum.

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SAFETY . . .

Continued

ured a job in Vermont and might have included our usual flat insurance factor percentage, had not our carrier advised that Vermont compensation rates are approximately 50% lower than Massachusetts rates. For this large project, the rate differential amounted to a sizable part of the difference in bid prices and helped to win the job.

• The contractor should inform the carrier that he wishes to avail himself of all the services that the carrier has to offer. Although the insurance carrier has considerable material and personnel on hand to aid you in reducing accident costs, there often is some laxity in forwarding this help to the contractor.

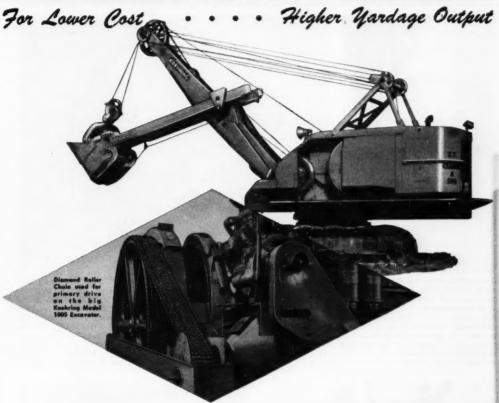
These safety procedures have saved my firm thousands of dollars. To substantiate this statement. consider the reduction of our experience rating, which, until we got a little cocky, had been reduced from a 16% debit to a 24% credit. Consider for a moment a \$16-million job we constructed for the Army Engineers at the Limestone, Maine, Air Force Base. This project had an average of more than 1,200 men on the payroll.

In five months we worked 716,745 man-hours. Despite the lack of trained personnel in many instances and the fantastic speed with which the job was carried on, we had but 5 lost-time accidents, involving just 61 days of lost time. This means that our frequency rate has been 6.97 and our severity rate .084. Compare these figures with the national averages in construction of 19.34 and 2.15 and you can see how safety pays off financially.

The results of a successful safety program are many. The most important in my opinion is the elimination of fatal or crippling accidents. Men working under safe conditions produce more than those working under unsafe conditions. Better production means profit on a job and tends to lower costs. Lower building costs are a gain for the community, for the contractor, and the employeewho is assured of continued gainful employment and the continued well-being of his family.

These real and tangible results should be the incentive for all of us to continue our intensive efforts toward safe jobs.

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• Leading manufacturers and contractors alike have proved through long experience that Diamond Roller Chains give longer service with less maintenance and greater on-the-job economy. Their great reserve strength and uniformity of construction means less down time . . . makes every man bour a productive hour for higher

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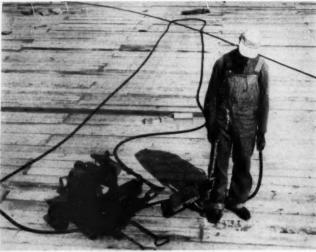
DIAMOND ROLLER CHAINS



CONSTRUCTION EQUIPMENT NEWS . . A Preview of

JAMES M. CONNOLLY, Equipment Editor





AUTOMATIC NAILER "WALKS" OVER THE JOB

The amazing new automatic and pneumatic nailing machine shown here is called the Nu-Matic Nailer. This machine and operator nailed down the entire 21-acre roof of the new Chrysler plant in Los Angeles, keeping four crews of men busy laying 2x8 tongue-and-groove planking ahead of it. The machine is operated by compressed air, its operator guiding it with a foot stirrup, moving his foot along to each nailing position and working the handle up and down to set nails in place for the hammer which works with a hand-trigger. The hammer

drives nails at the rate of 1,000 blows/min and the rig can nail a minimum of 5,000 sq ft/day or 100 nails/min. Using 6d to 20d common nails, it is practical up to a 4/12 pitch. Weight is 30 lb. Adjustable for left- or right-handed operators the machine needs 12 cu ft of air at 90 psi. Each nail is countersunk to prevent damage to roof coverings. Job pictured was done by Wm. P. Neil Co Ltd. The NuMatic Nailer is not for sale. The company rents the equipment, and a contractor may hire a qualified operator recommended by the company.—National Nu-Matic Nailer, Inc., 2900 Rowena St., Los Angeles 39, Calif.



ISLAND ROLLER COMPACTS BETTER, QUICKER

The Gardner roll (offered exclusively by Buffalo-Spring-field) consists of two sections mounted on roller bearings and free to rotate independently on the guide-roll axle. The metal islands are mounted on sturdy spokes and form the compacting surface of the roll. Pads can enter material with a minimum of displacement and can eliminate undesirable flow of material. They leave the layer without picking up compacted material. The Gardner roll is interchangeable with the smooth-faced guide roll on B-S's KT-19, KT-20, KT-24B and KT-25B tandem rollers.—The Buffalo-Springfield Roller Co., Springfield, Ohio



OVERSHOT LOADER SPORTS TWO IMPROVEMENTS

One of two new features of the Austin Overshot Loader is a front-end power takeoff which supplies power to the bucket, independent of the main transmission system. This allows the operator more flexibility for faster operation, particularly since only one lever operates the bucket cycle. Second feature is the laminated wraparound chains used to raise and lower the bucket. In digging position they are connected to a small-dia hub for maximum pull. As the bucket lifts, the chain rolls up on itself giving the bucket uniformly accelerated speed to the dumping position.—John Austin Inc., 2 Santa Fe Dr., Denver, Colo.

New Machinery, Tools and Equipment That Will Help You on the Job



TRACK-GAGING DEVICE SECURES TIE-PLATES

Key element of the gaging machine here is its 8-ft steel shoe equal in width to the base of the rail to be laid. It's kept in correct alignment and at the right distance from the opposite rail by 2 flanged dollies on that rail. Plates are daubed with grease so that the runner glides over them and guides them to proper gage distance between rail heads. Then anchor-spike holes are bored with an air drill and spikes driven with a pneumatic hammer. Called "Dunright," they're made by Nordberg Manufacturing Co., Milwaukee, Wis.



WINCH-DRILL COMBINATION SPEEDS HOISTING

Take one American Handiwinch. Add one SKIL Drill. Result: In less than 3 min a pull up to 1,000 lb with not effort. The combination unit is ideal for dozens of hoising jobs. Here, a pull on the trigger hoists gravel, tar, roofing paper and other materials with ease. The entire rig is portable and it can be moved, set up and operated almost anywhere by 1 man. Loads up to ½ ton can be handled by a 1-in. drill at a rise of 10 fpm. By adding blocks and parts of line, this capacity can be increased.—American Hoist & Derrick Co., St. Paul 1, Minn.



WINDROW ELIMINATOR REDISTRIBUTES GRAVEL

In one pass this Allis-Chalmers power grader blades loose gravel out from the side of the road, bites into a high crown and passes the material off in a windrow. Then the alternately angled eliminator carries it back and distributes it according to the set of the rubber wheels behind. Through the hydraulic plungers and wrist action of the wheel-support frames the rear blade can be controlled to deliver varying thickness of fill and can be adjusted for left or right drainage, crown, etc. Full extension lifts the blade clear for reversing.—Allis-Chalmers Mfg. Co., Milwaukee I, Wis.



ONE-PASS SUB-BASE WITH VIBRATOR-TAMPER

Here's a rig that permits continuous 1-course sub-base construction, compacting up to 15 in. of loose aggregate to 10½ in. compacted thickness with a 95% Proctor density. Self-propelled and crawler-mounted, it weighs 9,000 lb and is moved by an 85-hp motor. V-belts pass the power to the 6 vibrating shoes, each 24x18 in. and weighing 435 lb. Total ground contact of the shoes is 18 sq ft. Eccentric gears and weights are used to provide an impact force of 35 lb-in. at a rate of 2,000 to 2,800 vibrations per min, with a compacting force of approximately 3,000 psi. Outstanding advantage is that it eliminates 2



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Use cost-cutting electrical tools on every job from start to finish, even where highline power is not available. Lightweight, heavy-duty Onan Electric Plants supply plugin electricity anywhere for power saws, pipe-threaders, drills, planers, vibrators, repair-shop tools, other motor-driven equipment and lights. Lightweight, air-cooled models: 400 to 5,000 watts. Water-cooled plants to 35,000 watts.

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ONE-CYLINDER
MODELS—Lightweight,
heavy-duty air-cooled.
400 to 1,000 watts A.C.
750 to 1,500 watts D.C.



TWO-CYLINDER
MODELS—Horizontallyopposed air-cooled, 1,500
and 3,000 wats A.C.—
2,000 and 5,000 wats D.C.



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and 3-course compaction over a 12-ft, 6-in. path. If necessary, a second pass will intersperse fines to the full depth of the compacted sub-base. The rig travels at a rate of 16 to 45 fpm, depending upon course thickness and material.—The International Vibration Co., 16702 Waterloo Rd., Cleveland 10. Ohio.



DIRECT DRIVE FOR TRANSIT MIXER-Outstanding feature on this new transit mixer is the Transo Direct Drive which eliminates sprockets, drive chains, and ring gears, which results, according to the manufacturer, in a saving of from 800 to 1,600 lb dead weight. planetary-type transmission eliminates shock loading, assures smooth starting and discharging, and holds equipment wear to a minimum. All clutches run in an oil bath and are spring-loaded for self-adjustment. The Transomixer has two starting and discharge speeds, and the built-in water pump has a separate spring-loaded clutch. It has been built to the specifications of the Truck Mixer Manufacturers' Bureau, is 12 to 17 in. shorter than other mixers of the same capacity, and is made with both 31/2- and 41/2-cu yd mixers. Another interesting development is the elimination of all seal wear between the hopper and mixing drum. This is the result of a permanently leak-proof seal, which makes maintenance and replacement formerly required on this part unnecessary.-The Transmission and Gear Co., Dearborn,

OIL-RESISTANT HOSE—The greatest single enemy of rubber is petroleum and its byproducts. Now comes an industrial-type hose known as Abrasoflex which is both oil- and abrasion-resistant. Abrasoflex hose is recommended for eight industrial applications including air, welding, cold water, hot water, paint spraying, oil spraying, grease and gasoline. The hose is available with a black cover, with 1- or 2-braid, hightensile reinforcement in seven sizes ranging from 3/16 to 1 in. ID, suitable for 250 psi working pressures.—Mercer Rubber Corp., 66 Reade St., New York, N. Y.

QUAKER Production-eered BELTING



MOVES 3,000,000 TONS OF ABRASIVE GRANITE . . . STILL GOING STRONG

Millions of tons of sharp, abrasive crushed granite—moved without noticeable wear or tear to the belt. And still going strong. High uninterrupted production . . . low maintenance . . . low cost per ton. That's the long-life story of this tough rubber conveyor belt "Production-eered" by Quaker for Greystone Granite Quarries, Henderson, N. C.

"Production-eered" to stand up and take it, this 42-inch Quaker Belt has traveled tens of thousands of miles over the years—on an endless torture test. Shock, abrasion, rain, snow, heat and cold have done their worst... yet today it's ready for more. Just one more example of Quaker "Production-eering" at work. Let an experienced Quaker "Production-eer" help you boost production, cut costs — with Quaker "Production-eered" belting, hose, packing, and molded rubber products.

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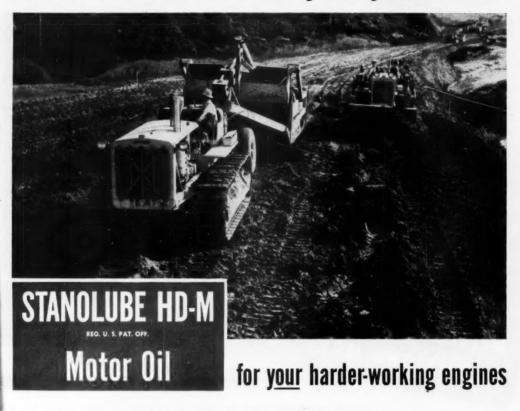


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• New and better STANOLUBE HD-M Motor Oil is an improved additive-type lubricant that combines more effective detergent-dispersant action with greater oxidation stability. Result: greater protection for commercial and military trucks, busses, and construction equipment ... greater protection for your harder-working engines.

More effective detergent-dispersant action and greater oxidation stability, proved by laboratory tests and confirmed in extensive field service, mean that engines stay cleaner under the toughest of operating conditions. Freedom from deposits means less engine wear, longer periods between overhauls, and lower maintenance costs. New Stanolube HD-M also offers the same bearing corrosion resistance and freedom from

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Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M Motor Oil for fast local delivery. This service-supply center is also headquarters for your Standard Oil lubrication specialist. Call him today. He can help you obtain maximum lubrication benefits with STANOLUBE HD-M, a new and better heavy-duty motor oil. Or write: Standard Oil Company (Indiana), 910 South Michigan ... Ave., Chicago 80, Illinois.

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(Indiana)



TWO-SPEED WINCH-For heavy loads, the ratio of this winch is 8.16 to 1, and for light loads or fast operation it can be changed quickly to 3 to 1. In spite of its apparent small size and weight, it is suited for handling heavy machinery through hand derricks, cranes and gin poles. It can be bolted anywhere and operates in any position. A self-locking feature holds the load at any desired spot. Over-all dimensions are 121/2 x 7½ x 7 in. Handle is 10 in. long; drum has a 3-in. dia, is 6 in. long and has 6-in. dia flanges. It can hold 100ft of 1/4-in. wire rope. Its light weight (371/2 lb) makes it highly acceptable where portability is a necessity.—The Gold Foundry & Machine Works, 1618 S. Osage St., Independence, Mo.



SPLIT DRUM SANDER—The Cone-Loc drum sander shown here is a cushion-type split drum which makes it possible to use coated abrasives in low-cost strip form. The two sander halves are shown being placed together, then a locking cone and arbor nut are tightened down. The new backing flange has been incorporated recently as an integral part of the tool, thus assuring a safe, strong, and balanced abrasive drum. The drum is equally effective on flexible shafts or stationary arbors.—American Diamond Saw Co., 519 N. W. Park Ave., Portland 9, Ore.



The Model 66 is a HEAVYWEIGHT in the ½-yd. class—31,978 lbs. as a shovel proves it—the extra weight is at points of greatest stress—this means more built-in hours of profitable operation.

You be the judge—don't buy a new crawler until you have compared Wayne
Crane with any or all other ½-yd. machines. See for yourself that Wayne
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UNI-FORMS • A Complete concrete forming system.	Conventional Forms	2400 bd. ft.	6 times	400 bd. ft.
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Service Wherever You Build...Coast-to-Coast



"Let the shovel go . . . but hang on to that DIPPER"

When the preference for an Amsco Dipper is so strong that a superintendent at one of Minnesota's largest iron mines quietly removes it from a shovel being shipped to another mine, there are apt to be some good performance reasons why!

The superintendent reported that this AMSCO 6½ yard renewable lip dipper loaded a record number of tons per 8 bour sbift—more than had ever been loaded before. And, where other dippers needed repairs every 2 months or so, it is still going strong after 6 months of service with no repairs of any kind!

Better design and construction are the reasons for this high production and longer, uninterrupted service. The wide mouth and shallow depth permit faster, easier digging and loading, and a 4-way taper insures clean dumping every time.

And, this dipper is all-cast-of tough, work-hardening AMSCO Manganese Steel. The re-

newable lip and heel plate, when finally worn, are replaceable in a matter of minutes.

Dippers can—and should be—bought with an eye to higher digging efficiency and lower costs per ton... and the moral of this actual on-the-job example is clear...

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

... find out about longer-lasting, dollar-saving Manganese Steel Dippers made by AMSCO... world's largest producer of manganese steel castings for all industry.

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Materials Handling

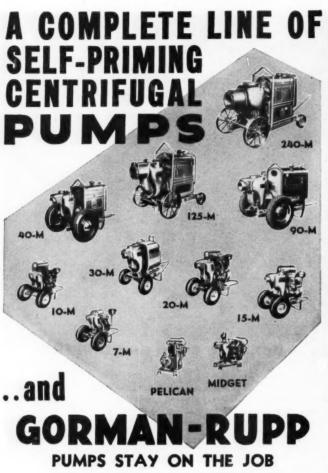
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They will handle the toughest jobs and help you to complete your contracts on time and at a greater profit. Save costly time out for repairs.

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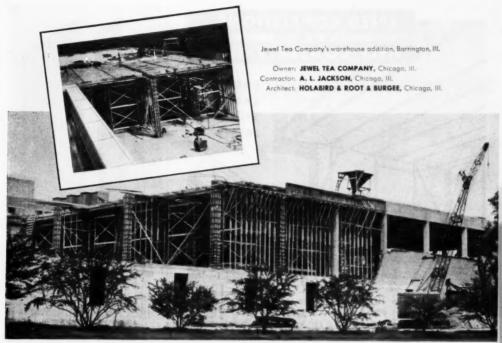
Ask for Contractors' Pump Bulletin 8-CP-11.

THE GORMAN-RUPP COMPANY, MANSFIELD, OHIO



PLASTIC WATER STOP-To eliminate leakage between joints on block pours, the workman here is installing one made of Geon polyvinyl plastic which provides superior aging characteristics, extreme resistance to the chemical action of concrete, and resistance to temperature changes that occur while concrete is poured and sets up. The plastic joint seal is a central rib backed by a U-shaped groove and weighs 2.02 lb per ft. The uniformity characteristic of Geon is highly important in extrusions of this size. The finished seal is rolled into 100-ft strips which are cut to desired lengths by a saw or knife on the job. The job pictured here is the Guayabo Hydroelectric Project, now under construction in El Salvador, Central America. Here a typical pour is a horizontal block 50 ft square and 5 ft thick. Heretofore, rubber and copper seals had to to be joined by vulcanizing and brazing operations, respectively. Joining or welding the thermoplastic vinyl strips is done at the installation site merely by applying sufficient heat to the loose ends with an electrically heated knife or gasoline torch, also eliminating waste of short pieces. A seal strip of different design, using the same principle, is being developed for construction joints where large shrinkage is expected. Use of the plastic seal is recommended in architectural concrete structures above ground level, for joints in foundation walls, or between foundation walls and floors.—B. F. Goodrich Chemical Co., 324 Rose Bldg., Cleveland 15. Ohio.

OBLEMS



Use of Lehigh Early Strength Cement and movable scaffolds for forms kept job moving fast.

TIME SAVED, COSTS CUT



Pouring the 300' x 120' roof slab.

with LEHIGH EARLY STRENGTH CEMENT

Time was saved, costs were cut in pouring the roof slab on the Jewel Tea Company's warehouse addition shown here. Several factors contributed to these savings. They included a well-planned operational cycle, the use of movable scaffolds for the forms; and—to allow early re-use of forms—a fast-curing concrete made with Lehigh Early Strength Cement.

The result! A two-way saving—in time, in money. In the six-pour operation, forms were stripped in 3 days instead of the usual 7. Construction time was reduced by 24 days; labor and overhead costs were cut 18%.

Let Lehigh Early Strength Cement save you time and money in your construction. Our Service Department will be glad to help you with your specific problems.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA. CHICAGO, ILL. SPOKANE, WASH.



LEHIGH PORTLAND CEMENT - LEHIGH EARLY STRENGTH CEMENT - LEHIGH AIR-ENTRAINING CEMENT - LEHIGH MORTAR CEMENT



By using steel joists for roofs and floors you can aid in conserving critical steel for construction and help speed your job to completion.

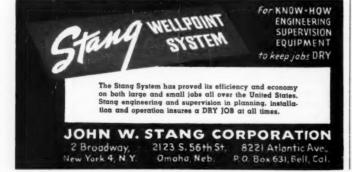
A class "B" product that needs no allocation, Laclede Steel Joists are available for prompt delivery from our expanded mill facilities.

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MILL FACILITIES





WAX COOLANT-The newest industrial product developed by the makers of Johnson's wax is a wax coolant formulated especially for use with power hack saws and routers. The non-flammable coolant has excellent cooling properties and provides uniquely effective lubrication. The wax coolant greatly reduces wear of the router bits when used with radial arm routers, and eliminates much of the welding and burring on rolled edges. On the two pieces of 75 ST aluminum shown above, a conventional lubricant was used on the piece at the left along with an Onsrud high-speed radial arm router. This left a heavy burr and permitted only three cuts per tool. Johnson's No. 170 coolant was used on the piece at the right and allowed 11 cuts per tool, leaving no burr and requiring 50% less effort to pull and guide the router bit. Whenever degreasing is necessary, the residual coolant can be removed from the metal with conventional vapor degreasers or in alkaline washes. The product definitely is not intended for use in machines which return systems.—Johnson's have Wax Co., Racine, Wis.

PROTECTIVE ROOF COATING-Developed to stop oxidation and depreciation of asphalt and composition roofing, Permalume liquid foils are protective roof coatings of the rubber-metallic type, copper or aluminum. The latter type also provides reflective insulation during hot weather. Material can be sprayed or painted and in less than an hour the petroleum solvent evaporates leaving a rubber-like film to protect the roofing. Properly applied (100 to 500 sq ft per gal, depending upon material) it should last for years. Actually brought out 5 yr ago, the coatings have undergone scrutiny for that length of time on several installations with no deterioration.-Grems Mfg. Co., 5635 S. 6th St., Klamath Falls, Ore.

Tiger Brand Wire Rope

lifts largest single-plate girder span ever erected



● The Ward's Island Lift Bridge connecting Manhattan and Ward's Island is reputed to be the largest single-plate girder span ever erected. This is a pedestrian bridge spanning part of the East River. The center span is 312 feet 2¼ inches long and is designed for an 80-foot lift.

The main span weighs 375 tons and is hoisted by 32 U·S·S American Tiger Brand Wire Ropes 1% inches in diameter. The ropes are prestressed 6×19 Monitor Steel with Fibre Core. This construction has the requisite strength combined with the proper flexibility to give long service.

On big jobs requiring utmost dependability, engineers choose a wire rope that has proved itself in service. That's why they

select U·S·S American Tiger Brand so often. But whether your job is big or small, you can find a Tiger Brand Wire Rope designed to fit your needs. Let our wire rope specialists help you choose the Right Rope for your particular jobs.



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fame is bringing new efficiency to thousands of jobs . . . more profit to dealers Features such as simultaneous cooling of both valves and extra fins . . . for cooler operation . . . special cylinders, and automotive type pistons for more power and longer life, have made LAUSON a favorite with engineer, designer, and, most important of all,
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LAUSON powered mowers are among the leaders in their field for
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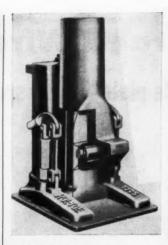
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OUTBOARD MOTORS AUSON PORTABLE - ENGINES



HYDRAULIC JACK-Here's a jack with a lifting capacity of 25 tons on both its toe and cap-because a bearing roller in the toe carries radial loads against the flat milled surface of the stationary ram (see dotted lines in photo). This ram doesn't travel-the heavy body lifts the load instead. Its oil reservoir is independent of this load-lifting housing, and the manufacturer says this eliminates pressure stress, as well as preventing oil leakage caused by the reservoir's breaking away from the base. The Simplex Rol-Toe Jack has two pumps-one is high speed for positioning and lifting light loads, and the other is a high-pressure pump for heavy lifts. A built-in safety bypass valve prevents overloading. Jack is usable vertically or horizontally.—Templeton, Kenly & Co., 1020 S. Central Ave., Chicago

GASOLINE CUTTING TORCH-A new cutting torch has been developed-one that burns gasoline and oxygen-and it is said to have many advantages over the oxyacetylene type. Usable for such operations as cutting, brazing and scarfing, the torch is said to do as much work on 70c worth of gasoline as an oxyacetylene torch can perform on a 100-cu ft tank of acetylene. Basically, the new torch operates in the same manner as an acetylene torch. It blends liquid gasoline and oxygen and converts the blend into vapor in the torch tip by the best heat of the torch flame. Other advantages claimed are reduction in bulk and weight by elimination of large acetylene cylinders in favor of small gasoline cans, and a cutting-head design which eliminates backfiring and backflashing into the torch handle. Manufactured by Browning Torch Corp., it is available from the distributor, Steel News Industries, Inc., R. D. #2, Canonsburg, Pa.

HOW TO HANDLE ANY RIGGING JOB

· effectively · safely

MEET today's problems in industrial and construction rigging with this complete handbook. Use it as your guide to safe and efficient rigging methods and techniques—in transporting or handling heavy machinery or materials... in your very day mail conceing or dening smaller size extention of dening maller size extentions or dening smaller size extentions. ations . . . in erecting or de-molishing smaller size structures.

This book enables you to do the job quicker, safer, at lower cost. It shows how to determine the weight of a load, and describes equipment and techniques best suited to its transportation or holating. It explains applications, illustrates construction details, gives maintenance tips for all kinds of rigging equipment, shows how to use, inspect and maintain fiber and wire ropes, alings, scaffolds, life belts, cranes and derricks, chain hoists, etc.

HANDBOOK OF RIGGING

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321 pages, 6 x 9, over 300 illustrations,

P ACKED into the pages of this guide are your job with greatest safety to all concerned. The book includes simple formulas useful in the accurate calculation of beams and posts, etc. It data on wire rope installa-

on wire rope installations, and covers every step in rigging operations — from rigging as swinging scaffold and painting a steel stack . . to using a hydraulic jack and operating a hosts. Reference codes, laws and standards are live that there will be no violation of local laws, no deviation from safe practices.

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 test planks for scarfolds
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jobs of test a jack
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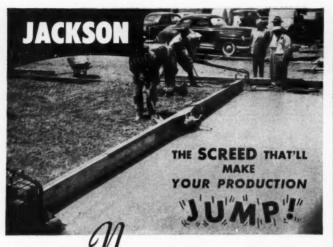
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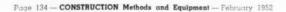


othing compares with it for convenience, thoroughness and productivity on municipal concrete paving, highway widening, bridge-decks and similar jobs. It strikes off to any crown, undercuts at curb or sideform, works up to and around all obstructions. Permits pouring slabs up to 30' without center joint. Requires only two men on widest slab and is the only screed that can be rolled back for second passes on 4 rollers. Powered by Jackson 1.25 KVA Power Plant. Get the jump on competition. For Rent or Sale at your Jackson distributor. Details on request.

AND FOR A Revolutionary MEANS OF COMPACTING ASPHALT . . .

. . . in highway patching or widening, walks, drives, railway platforms and street crossings, etc. . . . investigate the new Jackson Vibratory Compactor. It delivers up to 4500 134-ton blaws per minute; propels itself and will compact 900 to 1200 sq. ft. per hour close to maximum







FULLY - AUTOMATIC WELDING HEAD-Welding head controls welding and positioner operation automatically, as well as operation of the high-frequency pilot circuit, if one is used The electro-mechanical control circuit automatically stops both head and positioner drives if the arc is broken or the electrode sticks to the work piece. Designated as the Mir-O-Col Model 944, its head-driving motor operates on either or both the welding voltage, or a separate 110-v source. It is electrically independent of the positioner and welding transformer power supply, completely eliminating phasing problems. The motor drives the feed rolls through a specially designed gear reduction train. All gears and bearings are readily accessible and can be re-placed on the job by the average mechanic without any special tools. Electrodes from 1/8 to 3/8 in. can be accommodated. Maximum current capacity is 2,000 amp. - Mir-O-Col Alloy Co., Inc., 312 North Ave. 21, Los Angeles, 31, Calif.

DEVICE FOR UNDERWATER WORK—A sonar device which should be useful in dredging, hydrographic survey, and channel reconnaissance is now available. Heart of the compact, 150-lb machine is a crystal of Rochelle salt, which can be ground to control ultrasonic signals at a desired frequency. This crystal converts electrical energy pulses of ultrasonic sound. The sound is focused into a narrow, searchlight-like beam with a range of 1 mi. Sound pulses are shot out through a transmitter, with echoes from underwater objects coming back to the transmitter, displayed on a cathode-type screen. Another cathode-ray tube, which measures distance, helps to identify the nature and exact position of the target. The returning echoes are translated into audible sounds which a trained operator, listening to a loud speaker, can easily identify. Solid objects, such as rocks, give a hard, sharp "ping", while a hidden sand bar, for instance, brings a harsh, scratchy sound. - Intervox Corp., Seattle,

DOES THE WORK

Here's another big reason Lorain-50's, models I, K & S, are so outstanding in the 1-yd. class! When Air goes to work on a "50", your operator just can't help but give you more yardsper-hour; more profit-per-day. Why? Because he's benefiting from these important operating advantages . . .

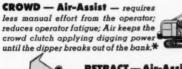




HOIST - Air-Assist - allows the operator to retain that important finger-tip, sensitive "feel" of just what his machine is doing.*

CRAWLER STEERING AND TREAD-LOCK OPERATION - Air-Controls -

Air makes it faster and easier to steer the Crawler - or set the Tread Locking Pawls from the operator's station, regardless of the Turntable swing position.



RETRACT - Air-Assist - levers must be moved shorter distances with reduced effort, to maintain clutch application.*

* All these features apply to the Air-Assist control of Hoist, Crowd, Drag-

CONTROLS

All Air Controls are equipped for quick switch-over to straight, manual, mechanical operation in cases of emergencies. Immediate take-over; no adjustment; no loss of time.



HYDRAULIC COUPLING

In addition to this improved operation, Lorain "50's" give you the Hydraulic Coupling with its no-engine stall, shock-proof performance. The "50" is your combination for "easiest" and "smoothest."

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THE THEW SHOVEL CO., LORAIN, OHIO

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CLYDE WHIRLEY HANDLES
MUCH SOIL ON
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This dredge-mounted Clyde Whirley is being used to dike off approximately 11,000 acres of marshland in South Central Oregon.

Handling a 3½ yd. bucket on a 150 ft. boom to dig muck soil averaging 16 feet in depth is no ordinary job but Clyde Whirley owners and operators expect and get unusual performance from these precision-engineered, quality-built machines.

If you have any unusual material handling problems, consult with Clyde engineers for recommendations and suggestions on how to economically solve them.



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No expensive, overhead trestle needed as for bridge type cranes . . . just two sets of tracks for Whirley to travel on. Clyde Whirleys save on storage space too. Their long-reaching, full-revolving booms permit rapid handling of materials on either side of the tracks.

Clyde Whirleys embody many features that result in greater ease and speed in handling, increased capacity, less maintenance and longer-life dependability. Investigate these Clyde advantages.

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DULUTH MINNESOTA

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Air Compressor

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lightweight

low in cost

Agair compressor hat in compressor

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Preumapower 60 likewise offers weight saving and the same advantages as the 105, with an actual air capacity of 60 cu. ft.

Pneumapower 20 | Each a one

man outfit that can easily be moved about and provides air for Paint Spraying, Road Marking, Grease Guns, Driving Stakes, Tire Service Work, etc. Precumapower 105... the most compact, lightweight 105 cu. ft. air compressor built. It is easily towed by car or truck and the skidded unit fits into one corner of your truck, leaving valuable space for other items... more practical than the cumbersome Power Take-Off type.

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SCHRAMM, INC.

The Compressor People

WEST CHESTER



PENNSYLVANIA

SCHRAMM AIR COMPRESSORS

February 1952 — CONSTRUCTION Methods and Equipment — Page 137

Make Your Replacements with the carbureter preferred for original equipment



Marvel-Schebler Carbureters are specified as original equipment on many leading industrial engines and tractor because they give maximum dependability and economy.

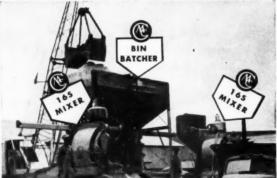


Any engine runs better and costs less to operate with a new Marvel-Schebler Carbureter. So, make your replacements with Marvel-Schebler Carbureters. And remember this! Engineers recommend that the carbureter on heavy duty equipment be completely rebuilt or replaced after 800 work hours of service in the interest of better performance and lower operating costs.

MARVEL-SCHEBLER CARBURETERS

MARVEL-SCHEBLER PRODUCTS DIV., Borg-Warner Corp., Decatur, III.





lt's double speed ahead <u>nou!</u>



Here's a portable Central Plant that amazingly reduces pouring costs. It's CMC 155 misers in tandem with CMC two-oble BIN-BATCHER. When you buy select CMC equipment and you get the best. Every piece of CMC equipment is built to take the punishment of long service! Write today for latest catalogs.





ONE-MAN LOADER-Instead of the normally required two or four men. one man can use the new Belsaw loader to roll items off or on delivery trucks or platforms, etc. Weighing less than 150 lb, the rig handles up to 1/2-ton loads. An easily operated two-speed hand winch is attached with an extension handle that permits loading of wide boxes and crates. Originally designed for construction men for loading heavy, bulky items to and from the job, it has proved ideal for many other uses, as well. Available in 10- and 20ft lengths from Belsaw Machinery Co., 315 Westport Rd., Kansas City 2. Mo.

CONTINUITY TESTER-A pocketsize continuity tester has been designed to determine continuity of circuits and to identify wires between terminals or in multi-wire cable of switchboards, control panels, and other assemblies. It permits testing of circuits without use of live-wire connections, since it provides its own power from pen-light batteries. A signal-light indicator illuminates the point of contact. It requires only one hand, leaving the other hand free to hold circuit diagrams or blueprints. Fine for electricians, building and plant maintenance men, it is available from Ideal Industries Inc., 4102 Park Ave., Sycamore, Ill.

STEAM CLEANER—A steam cleaner that works on any steam supply of 60 to 150 psi to remove grease and dirt from machinery, equipment, and floors is the latest addition to the Hypressure Jenny family. Known as Model F-15 "Fireless" Hy-Steam-Pressure Jenny, the new unit is portable. After connecting to steam and water supply lines, and 110-v, 60-cy ac lighting circuit, a flick of the starting switch produces anywhere from 45 to 90 gph of boiling hot chemical vapor spray, controlled by the operator. Where steam supply pressure exceeds 150 psi, the manufacturer advises use of a steam-pressure regulator with this "Fireless" Jenny unit. It includes 25 ft of vapor hose, a cleaning gun with nozzle control and nozzles; weighs approxi-mately 240 lb. The unit measures 37 in. long by 27 in. wide, by 37 in. high.-Hypressure Jenny Div., Homestead Valve Mfg. Co., Coraopolis, Pa.

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In Construction, Chrysler Powers
Ditching Machines • Cranes • Truck
Mixers • Shovels • Loaders •
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Chrysler Industrial Engines

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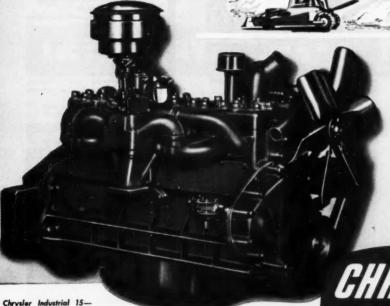


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Chrysler Industrial 15 one of eight basic models

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For Chrysler Industrial Engines are built solely for industrial jobs. Furthermore, Chrysler Industrial Engines are designed and engineered to meet the specific working requirements of each type of equipment they power. They can also be adapted to special regional operating conditions.

A letter of inquiry will bring an engineer well qualified to discuss your particular application. Address: Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.



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specify the wire rope that gives the greatest service. "HERCULES" (Red-Strand) Preformed spools more evenly—bends more smoothly. Handles more safely. Splices more easily. Far fewer replacements are needed.

Engineered to reduce internal tension and twisting, "HERCULES" (Red-Strand) Preformed stays on the job in the groove.

For uninterrupted production, there is only one right rope... be sure to select the correct size and type.



Feel free to consult our Engineering Department at any time for specific recommendations. A. LESCHEN & SONS ROPE CO., 5909 Kennerly Ave., St. Louis, Missouri. Warehouses and branch offices in all principal cities.



LESCHEN WIRE ROPE





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For 20 straight years Internationals have been first in heavy-duty truck sales.

It will soon be 21. Another year will be added to International Trucks' heavy-duty leadership because truck operators who know hauling costs will continue to prefer the trucks that give them lower operating and maintenance costs, longer truck life.

If you are interested in these money-saving advantages, why not see your International Truck Dealer or Branch about the truck engineered for your job?

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Check these exclusive advantages of Internationals:

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- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lb. GVW off-highway models.
- America's largest exclusive truck service organization.



International Harvester Builds McCormick Farm Equipment and Farmail Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezera

INTERNATIONAL INTERNATIONAL TRUCKS

Model LF-210, 175 inch wheelbase, with 5 cu. yd. concrete mixer, 37,000 lbs. GVW

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You'll say it's a "Beaut" and a BRUTE!



50 TONS OF POWER

Look at this picture! One man with easy effort on a short bandle exerts 100,000 lbs. of jack action! This hydraulic jack (model GB-11) weighs only 111 lbs. Its compactness and many exclusive features are typical of all Blackhawk Jacks.

THERE'S A BIG DIFFERENCE IN HYDRAULIC JACKS! Construction, mining and industrial men discover that Blackhawk Jacks last longer, serve better. It's the world's most complete line of Hydraulic Jack Equipment. And every model (1½ to 100-ton) is one-man operated. Order from your supply house. Write

for catalogs. Blackhawk Mfg. Co., Dept. J2322, Milwaukee 1, Wis.

BLACKHAWK

*PORTO-POWER" . PIPE BENDERS . WRENCHES



INJECTOR TESTING EQUIPMENT

-This company's line of nozzle injector testing equipment has been expanded to include several sets suitable for testing injection units of medium and large bore-and-stroke diesel engines. The combination set illustrated here is one of these new nozzle and injector testing devices for heavy-duty diesel power. It comprises a test pump and suitable fuelline connectors. The nozzles and injectors which can be tested with this combination set include, among others, Electro-Motive 567 and 201A injectors, GM 278 and 278A injectors, American Bosch T, U and V size nozzles. Also Type AKA, AKB and AKK nozzle holders, as well as many others.—Bacharach Industrial Equipment Instrument Co., 7000 Bennett St., Pittsburgh 8, Pa.

SELF - ALIGNING PAVEMENT FORMS—Newer, bigger self-aligning paving forms are available in sizes above 12 in. and can be furnished in any height required by specifications for airport paving to meet requirements of thicker pavement slabs needed to withstand greater concentrated wheel loads of heavy bombers and transport planes. Made of quarter-inch steel plate with base width equal to the height, the ends of each 10-ft section are reinforced by heavy angles welded to the base and web. Beveled steel pins slide into pipe guides, providing a simple, rugged connection, aligning the forms perfectly under all conditions and maintaining that alignment during subsequent paving operations. A heavy, perforated steel bar, supported by the stake pockets and welded to them, provides a rigid support for the ends of the pavement dowel bars. The spacing of holes in this support and in the web of the form can be varied to meet specifications. The self-aligning feature is said to permit rapid form setting regardless of whether the steel stakes are bent or forced off plumb, when driven into hard or stony subgrade.-Blaw-Knox Div., Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh

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Controlled Traction
Precision Sideshift

High-Lift Blade Extreme Blade Reach Completely Reversible Blade Full Hydraulic Control

+ the Best Bulldozer in the Business

Thanks to Exclusive All-Wheel Drive and All-Wheel Steer

AUSTIN-WESTERN COMPANY - Subsidiary of Baldwin-Lima-Hamilton Corporation - AURORA, ILLINOIS, U.S.A.





Prevent corrosion and abrasion... uncover wear before it causes damage and costly downtime... by cleaning regularly with MALSBARY Heavy-duty Cleaners. Clean equipment is easier to repair, too—saves up to 40% of mechanics' time. MALSBARY patented pumping system delivers plenty of hot solution at 250-400 lbs. pressure, cleans big tractors in 2 hours or less (conventional steam cleaners require 4 to 8 hours).

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DIRECTIONAL, WIDE - ANGLE SPRINKLER HEAD-This Rockwood T-head has been engineered and designed for use in fixed piping systems. It has a directional wideangle, medium velocity discharge, and is installed in a pendant position, generally recommended for automatic as well as open deluge use. The head can be used either sealed or open. The sealed head combines principles successfully developed in the company's WaterFog with the sturdy construction of its figure 4 fusible element in the regular sprinkler head. The design of the T-head breaks up water into a fog pattern fine enough to fill completely the area from ceiling to floor and heavy enough to drive particles down to any floor fire.

If the fire starts on the floor, hot gasses mushroom up in an inverted cone. This head has a wide angle distribution without voids in the area near the ceiling; thus it prevents gas and flame from rising and also from mushrooming and needlessly opening adjacent heads.—Rockwood Sprinkler Co., 38 Harlow St., Worcester 5, Mass.



PORTABLE HYDRAULIC CUTTER

—The recent dismantling of an explosion-wrecked plant in the Chicago area presented a serious problem in the removal of bent and twisted %-in. steel reinforcing rods, until a portable hydraulic cutter was brought (Continued on page 146)

NEW



What you have been waiting for in a Spur Gear Hoist

Light Weight

Carry it with one

hand. One-ton model, with coil chain for standard lift of 8 ft., weighs only 38 lb.

Ruggedly Dependable

Use it year after year.
Long life is built in
. . . sealed in. Housing is formed steel
plate—will not crack
under sudden shock

loads. Back plate is laminated for extra rigidity. Hoist mechanism has sealed-in lubricant.

Safe

Trust it to protect men and equipment. Tested at 100 percent overload. All load-holding parts are special alloy steel. This hoist actually has a five-to-one safety factor.

Economical

Service it yourself. The Challenger may be completely disassembled in minutes with simple tools. No lost travel time to and from the factory for repairs.

Find out more about the all-new Coffing Challenger, available in $\frac{1}{2}$ - and 1-ton capacities. Write for Bulletin D2C.



COFFING HOIST COMPANY Danville, Illinois

QUIK-LIFT ELECTRIC HOISTS - HOIST-ALLS -RATCHET LEVER HOISTS - MIGHTY-MIDGET PULLERS - DIFFERENTIAL CHAIN HOISTS -LOAD BINDERS - I-BEAM TROLLEYS



JOYCE JACKS Chosen for Safety

BY E. W. LaPLANTE COMPANY

"We demand an exceptionally high factor of safety in all our moving operations . . . that's why we selected Jouce Speed Powered Air Jacks to we selected Joyce Speea Powerea An Jacks to move this 1,500 foot, 4,000 ton Savannah River Bridge 17 feet straight up! Sixteen Joyce Air Jacks controlled by five men, easily completed the project in two months with no injuries or damages. Traffic continued at all times."

KENNETH F. ADAIR, pres. and gen. manager E. W. LaPLANTE COMPANY MOVING ENGINEERS





VERSATILE JOYCE AIR JACKS SAVE YOU MANPOWER!

Jovce Air Jacks offer you a multitude of applications.

ranging from heaviest equipment maintenance, and moving operations to pushing culverts, etc. One man actuates "Y" valves to easily control the speedy operation of two pairs of

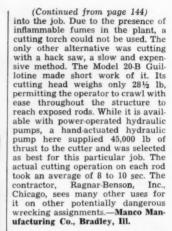
these jacks. "Speed Powered" by a heavy duty Ingersoll-Rand Rotary Air Motor, Joyce Air Jacks are available in 50, 75, and 100 tons!

Reliability of factory service further guarantees the dependability of these remarkable air jacks.

For complete information, write for bulletin 191-J today!

THE JOYCE-CRIDLAND COMPAN DAYTON, OHIO

Joyce builds a complete line of ratchet jacks, screw jacks, hydrau-lic jacks, shoring jacks, and trench braces—3 to 100 ton capacities.





HIGH SPEED FOLLOW-THROUGH HOLE SAW-Pictured here is a highspeed, heavy-duty through-type hole saw which can make a clean cut in any machinable material such as hard and mild steels, aluminum, brass and bronze, iron and steel pipes, and plastics. Holes to a depth of 11/8 in. may be cut in solid stock. In addition, because the body of the saw is slightly smaller than the cutting diameter, the complete tool follows through the hole it cuts. Cuts may thus be made readily through two or more walls or partitions—through both sides of large pipes—or to any desired depth in stacked material. "Blu-Mol" hole saws can be used in portable power drills with 1/4-in. chuck for the smaller sizes and 1/2 in., or larger, on the bigger saws. They may also be used in radial drills, lathes, and drill presses. The complete line includes 40 saw sizes ranging from % to 4½ in., three sizes of driving mandrels equipped with 4-in. high-speed pilot drills, and a 12-in. mandrel extension.-Millers Falls Co., Greenfield, Mass.



"We watched several machines go to pieces while breaking old concrete on a repaving job. Then we put a TRAXCA-VATOR on the work and it took the pounding and always came back for more. Our T6 is never out of work. If it isn't breaking loose and loading old paving, it's levelling shoulders, filling around bridge piers, or doing any of its 101 other jobs. We couldn't do without our TRAXCAVATOR."

That's Jack Hartmann, Vice-President of SMH Construction Co., Peoria, Illinois, and veteran contractor talking. His T6 has been at work for over three years and there's still nothing that can replace its versatile power.

You, too, can assign your toughest tasks to a TRAXCAVA-TOR—and earn the top profits that the economical, versatile machines produce. Visit your TRACKSON-CATERPILLAR Dealer for production facts and specifications on the TRAXCA-VATOR model that fits your work...Call him or write for information.

TRACKSON COMPANY, MILWAUKEE 1, WISC.
A Subsidiary of Caterpillar Tractor Co.



• A heaped load of wet, gummy topsoil is dug and dumped into an old creek bed by the T6 TRAXCAVATOR, owned by SMH. The work is in connection with a new housing development.

TRACKSON TRAXCAVATORS.

PIPE LAYERS
TRACLOADERS
TRACLOADERS
EARTH AUGER

Four-cycle Air-cooled

KOHLER ENGINES



Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on sales and service franchise.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES . HEATING EQUIPMENT . ELECTRIC PLANTS AIR-COOLED ENGINES . PRECISION CONTROLS

on the world's
RIGGEST

wire rope jobs ...



experienced riggers demand
GENUINE

CROSBY



Drop-forged, hot-dip galvanized wire rope fasteners

SIZES FOR ALL WIRE ROPE DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO. ST. PAUL I, MINNESOTA



ASPHALT PLANTS

Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.

Other Products

CONCRETE VIBRATORS Gasoline Engine and

Electric Motor Driven Models

HEATING KETTLES

AGGREGATE DRYERS

FRONT END LOADERS

WRITE FOR CIRCULARS

White Mig. Co.



PERMANENT TRAFFIC LINES-

Called "Perma-Line" by its inventors, this new type plasticized traffic line has demonstrated its permanency, as certified by the Pittsburgh Testing Laboratory. The patented Perma-Line method, employing specially constructed machines, incrustates roadways with hot or cold plasticized filler 2 to 6 in, wide and 1/2 in, deep, which, upon curing and hardening, becomes an integral part of the road itself. By changing the ratio of chemicals of the filler, the product's coefficient of expansion can be adjusted to be identical with that of the road in which it is laid, thus making it equally adaptable to concrete, asphalt, macadam, or brick surfaces. Repeated tests have found Perma-Lines impervious to pounding, absorption of moisture or chemical reaction from rock salt. Level with the road, they cannot be scooped out by snow plows. Moreover, the lines remain white continuously.-Perma-Line Corp. of U. S., 10 W. 47th St., New York 19, N. Y.



BELT-TRAINING CARRIER—These new units are particularly effective and on most conveyor belt applications need only be installed at intervals of 50-100 ft. The training rollers respond instantaneously to any shift of the belt off dead center and tilt the carrier into an angular position with respect to the direction of belt travel. This quickly returns the belt to center and the carrier resumes its normal position. Edge wear of the belt is negligible with this carrier, and its use insures against possibility of serious belt damage due to improper training. Available along with other standard and special carriers from Stephens-Adamson Mfg. Co., Aurora, Ill.

MIXERMOBILE MANUFACTURERS completely Fortable CONCRETE



- MIXING
- ELEVATING PLANT

CAPACITY UP TO 50 CU. YDS. PER HOUR

FROM RAW MATERIALS TO POURED CONCRETE

This ruggedly built trio means more jobs covered...reduced labor costs...savings in time and expense of making stationary installations. All functions are performed by one operator on each unit. Completely portable equipment travels at normal highway speeds...setup time for complete operation is 15 minutes or less.



MIXERMOBILE WEIGH BATCHER . Model WB-1

Completely portable unit weigh batches aggregate on the job. Can be charged with front end loader from storage piles or directly from dump trucks. Single operator sets up unit for operation in 15 minutes. Weigh batches up to 50 cu. yds. per hour.

- Three 7 cu. yd. bins and 2 cu. yd. skip store
 up to 23 cu. yds. of aggregate.

 Beguipped with either dial or beam sceles.
- Charging skip hydraulically operated.
- · Weight, 17,800 lbs; height, 12 ft.; width, 8 ft.; overall length, 28 ft. (with skip down).
- Bin selector located by skip control directs skip.

 Mounted all around on 8.25x20 tires.



2-YD. MIXERMOBILE . Model M-7

Completely mobile concrete mixing and elevating plant eliminates cost of hauling and erecting expensive equipment. One man handles the entire operation from mixer to deck

- Improved batch-timer and counter insures positive mixing time.
- New electronic water meter gives unerring accuracy.
- Sturdy planetary drive hoist clutches give extra power, durability.
- Mixes up to 50 cu. yds. per hour.





Write for literature and address of your nearest dealer. Mixermobile Manufacturers reserve the right to make improvements in design and specifications without notice.

SCOOPMOBILE · Model C. The versatile Scoopmobile with exclusive planetary drive has 7 "quick change" attachments. Standard ¾-cu. yd. scoop bucket permits operator to keep Weigh Batcher unit performing to full capacity.

- Loads and transports aggregate. • Transports, elevates and pours concrete.
 - · Lifts and places form panels, timbers, etc., up to 4,000 lbs. capacity.

ATTACHMENTS INCLUDE: Scoop buckets in various sizes, swivel and standard type concrete hoppers in 3/4 cu. yd. capacities, lift forks, crane boom, track extensions with braces up to 26 feet overall.

MANUFACTURERS

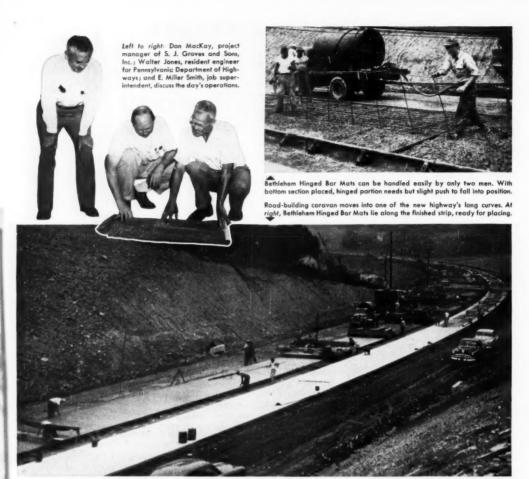








Portland 20, Oregon



Express Highway Links Philadelphia and Turnpike

The four-lane Schuylkill Express Highway will provide a fast, direct route between Philadelphia and the Pennsylvania Turnpike's Eastern terminus at King of Prussia. S. J. Groves and Sons, Inc., was the contractor for the 2-mile section extending from West Conshohocken to Gulph Mills. Bethlehem furnished dowel units, bar mats, hook bolts and reinforcing bars.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast
Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail Guard Rail Posts • Wire Rope and Strand • Pipe Hollow Drill Steel • Spikes • Bolts and Nuts • Tie-Rods Timber Bridge Hardware • Sheet- and H-Pilling





Skip swings down for a new load. Bethlehem Dowel Units, visible between road forms, hold dowels in accurate alignment, horizontally and vertically. These units minimize load-transfer problems caused by heavy wheel loads.

from the BUTLER ENGINEER

February, 1952

Priorities...and we must read Japanese vet!

Ah me! These priorities. A fella called up long distance. Had to have a Butler Ready Mix Plant, not next month, not next week, but as of NOW.

"Look! he said, his voice shaking with intensity. "I've got a Directive — a DX Priority!"

Ah me, again! A DX Priority gets anything-absolutely anying-except steel, aluminum or copper. A DX is for some lad with 10,000 army trucks, all complete and ready for shipment except for door handles. It will get those handles immediately-if they're made of papier maché.

One of our distributors vacationing in a foreign land heard of a construction job nearby. Building a foundation for an enormous catalytic petroleum cracking plant. Cost: 7 million dollars per copy. So, he went out to watch the work.

He found a crew of men dumping bags of cement into a rock crusher. What goes on? "The cement — she is got hard. We break it up to mix."

A 7 million dollar structure on foundations built with air-set cement!

Our distributor got hold of the big boss in time. But the grapevine carried the news of Trouble (with a capital T) to the foreman who took off like a rocket in a jeep and didn't show for two weeks.

We've had spec drawings with all notes in Greek, Turkish and Swiss but now comes a set in Japanese! Are we linguists or engineers?

Much more of that and we'll extend a cordial invitation to the United Nations to settle in Waukesha-except Mr. Vthat is.

See you soon.

The Butter Engineer

BUTLER BIN COMPANY WAUKESHA, WISCONSIN

DISTRIBUTOR TERRITORIES

NOW OPEN FOR PROVEN NEW LINE!

McGOWAN

self-priming centrifugal pumps







Here is the outstanding line of self-priming Centrifugal pumps in the field . . . fast sellers for an aggressive Distributor to handle. These pumps are now in operation all over the world. They are of all welded steel construction, with automatic priming, non-clogging impeller, hardened wear plates, large access plates, tested trouble free shaft seals. Sizes up to 125 M. In 3", 4", 6", 8", 10" high pressure, 3", 4" diaphragm. Built by a Company with an international reputation for quality and service since 1852.

today

********** McGOWAN PUMP CO., Div. of Leyman Mig. Corp.

Dept. I. Central Ave., Cincinnati, Ohio Gentlemen: Please send me information on Distributor territories now open.

CITY.....STATE....



division of

MANUFACTURING

CINCINNATI, OHIO

McGOWAN PUMP to.

CORPORATION

UNIT TV*



* Terrific Value...
IN EVERY CHANNEL OF OPERATION.

SEE this modern 1/2 yard excavator perform and

you'll see high efficiency and versatility coupled

with low maintenance cost. The Unit 614 combines

speed, power, and finger-tip responsiveness. It has

the same rugged construction usually found in

machines of greater capacity. Check these life-

prolonging features: One-piece gear case . . .

Twin hook rollers . . . Automatic traction brakes

... Drop forged gears ... Involute splined shafts

... Disc type clutches ... Straight-In-line mounting

of engine and main machinery. Streamlined FULL

VISION CAB provides 360° visibility. Keeps both

man and machine operating at top efficiency.

Promotes safety. Write for Catalog No. 5000.

Select Your Favorite UNIT Star

- ★ UNIT 357 Mobile Type
 1/2 Yard Excavator
 Crane up to 9 tens.
- ★ UNIT 614 Crawler Type
 1/2 Yard Excavator
 Crane up to 8 tons.
 ★ UNIT 1020 Crawler Type
- Yard Excevator
 Crane up to 10 tons.
- ★ UNIT 1520 Mobile Type
 ³/₄ Yard Excavator
 Crane up to 20 tons.
- WNIT 1014 Truck Crane
 1/2 Yord Excavelor
 Crane up to 12 tons.
- ★ UNIT 1520T Truck Crans
 3/4 Yard Excavator
 Crans up to 20 tons.

All Models Convertible to ALL Attachments.



Send for your copy of the UNIT "TV" brochure. It portrays the complete UNIT line; illustrates ten reasons why UNIT is a better machine.

SHOVELS . BEAGLINES . CLAMSHELLS . CEANES . TEENCHOIS . MAGNETS

UNIT CRANE & SHOVEL CORP.

IT'S HERE AT LAST!

A sure way to save money on your next wellpoint job is to get Foundation's new 4" 1000 GPM capacity pump . . . sturdy, compact, for medium and small wellpoint jobs. Why use big 6" and 8" pumping units and pay big fuel bills when you can use this efficient 4" pump, tailor-made for the job? Economical to operate and maintain . . . easy to move around.





4" unit powered by 4-cyl. gas engine

RENTAL - SALES

Write for Literature



COPPER JOINT-A new 18-oz copper joint to provide for the expansion and contraction of copper flashings at the base of parapet and main building walls appeared on the market recently. It permits the use of a prefabricated copper expansion joint where far less durable and more costly methods have been employed previously. The base flashing expansion joint shown above is formed at an angle to fit exactly the standard dimensions of copper base flashing. It has a 4-in, horizontal leg and a 12-in. vertical member. Open seams on the edges of the joint permit fast, easy interlocking and soldering of adjoining lengths of base flashing. Running down the full length of the member is a half-circle approximately 1 in. in diameter. This permits movement of base flashing due to temperature variations. The joints should be placed a maximum of 24 ft apart along the base flashing. Either plain or ribbed copper cap flashing can be used with the Chase base flashing expansion joint. A prefabricated cap box is also furnished with each expansion joint for attaching to the cap flashing as a protective cover for the half-circle in the expansion joint. This cap box is shown in the workman's hand above.

—Chase Brass & Copper Co., Waterbury 20, Conn.



15 Years of PROGRESS



An early model Smith-Mobile working on Greendale Housing Project near the city of Milwaukee, in 1937.

SMITH-MOBILE Early Model Built in 1937

11st in the Field

FIRST high discharge truck mixer.

FIRST to eliminate the need for hoist or ramp.

FIRST with a controlled discharge.

FIRST to provide visible mixing.

FIRST with feed chute charging.

FIRST to provide for shrinking and mixing of batch as materials

enter drum.

FIRST to introduce water through

the feed opening.

FIRST to provide water injection through both ends of drum.

FIRST steep distributing spout, especially ideal for dry concrete.

FIRST to announce fluid drive as standard equipment.

FIRST with LOADLIMIT models.

1952 Model
SMITH-MOBILE

You want the very finest truck mixer that money can buy. You get it in the Smith-Mobile.

Rome wasn't built in a day. Nor was the modern Smith-Mobile evolved overnight. It was designed around basic Smith inventions and patents long before anybody else built high discharge truck mixers. Important refinements were added from year to year, all based on intensive research and practical experience gained in the field.

Today, Smith-Mobile continues, as always, to be the acknowledged leader in the industry. Buy Smith-Mobile and be sure you are getting the best. Five sizes available. Standard or LOADLIMIT models.

Write for descriptive literature.

THE T. L. SMITH COMPANY, 2851 N. 32nd Street, Milwaukee 45, Wis.



SMITHUMOBILE

The Original High Discharge Truck Mixer and Agitator

THOROSEAL Restored this Filtration Plant

BEFORE

Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.



It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

AFTER

At minimum cost, almost ½ the cost of other methods, concrete restoration, patching and surface protection was completed with THORO System products on Filtration Plant in Keyser, West Virginia. Contractor: Standard Construction & Waterproofing Company, of Cumberland, Maryland.



WATERPLUG

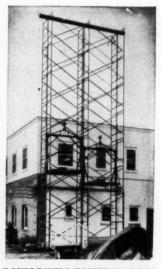
THOROSEAL

QUICKSEAL

Our 20-page Brochuse describes, in detail, how The THORO System products can benefit you in your construction plan. Send for brochuse tuday, which shows methods of application and how to use the material.

Standard Dry Wall Products Box X, NEW EAGLE, PENNA.





DOUBLE-WELL HOISTING TOWER -Standard Waco sectional scaffolding is used to erect this Waco material-hoisting tower. Available either as a double or single-well unit, it can be erected in approximately 41/2 hr by three men. Features include a slow-up brake on the power mechanism to govern plat-form descending speed, and a safety slack-brake which sets automatically in case of failure in the hoisting rig. Powered by interchangeable gasoline or electric power units with hoisting speeds of 100 and 110 fpm, respectively, each tower has a capacity of 1,000 lb. Hoisting mechanism, cage, motor mount and cathead pulleys are available as a package unit. Wilson · Albrecht Co., Inc., 3565
 Wooddale Ave, St. Louis Park, Minn.



SELF-DUMPING HOPPER—Optional equipment on the Model M 2500 Kalamazoo speed truck is a ½-yd self-dumping hopper shown in the photograph above. The hopper can be discharged without the necessity of the operator leaving his seat. Cinders, sand, gravel, cement, concrete, water, and most liquid or dry materials can be economically handled with this unit, according to the manufacturer. Its net weight is 1,150 lb, he says, (Continued on page 159)

Savings for you— All down the Air Line

START YOUR SAVINGS WITH A GARDNER-DENVER WATER-COOLED PORTABLE

You can bank on a Gardner-Denver Two-Stage, fully Water-Cooled Portable Compressor for low-cost compressed air that's always available at full capacity — regardless of temperature, weather or altitude.



ADD AN LO12 AUTOMATIC LINE OILER

Saves shop time and repair costs for any pneumatic tool, because it's designed to stop the flow of air when it runs out of oil. Protects your drills and tools against "dry run" damage.



TOTAL UP THE EXTRA FOOTAGE DRILLED WITH GARDNER-DENVER SINKERS

Pick the size that's correct for deep or shallow holes — in any type of ground — and watch your drillers turn in more footage every shift. Powerful rotation — excellent hole cleaning ability — easy holding characteristics.

Write us today for further information on saving with Gardner-Denver Portables, Line Oilers and Sinkers.



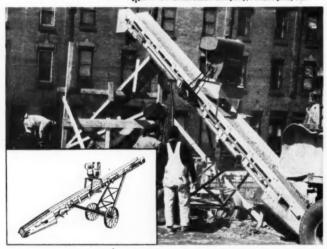


GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., Teronto, Ontario
THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

FARQUHAR CONVEYOR SAVES \$125 A WEEK ON CONSTRUCTION JOB*

Scat M & L Construction Company, Philadelphia, Pa.



THIS Farquhar Conveyor, used by the M & L Construction Co., unloads $6\frac{1}{2}$ cubic yards of wet concrete in 10 minutes, direct to forms. On one job alone, it saved the labor of two or three men—saving \$125 a week, and quickly defraying the Conveyor's initial low cost of \$1200. In addition, costly runways, scaffolding, buggies and wheelbarrows were eliminated!

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut your handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent and permanent conveyors will solve your handling problem. Our engineers will be glad to consult with you... at no obligation!



WRITE for complete information to A. B. FARQUHAR CO., Conveyor Div., Dept. F-26, 142 N. Duke St., York, Pa. or 618 W. Elm St., Chicago 10, Ill.

WORLD'S MOST COMPLETE
CONVEYOR LINE

HYDRAULIC PRESSES . FARM EQUIPMENT . FOOD PROCESSING AND SPECIAL MACHINERY

Save time and money on construction jobs



The reference aid that helps you solve your toughest construction problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship-ensure your work of the finest structural qualities—by providing yourself with this revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

HOOL AND KINNE'S

Structural Engineers' Handbook Library

Revised by R. R. ZIPPRODT.

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

6 volumes; 3763 pages; 2719 illustrations; 63 contributors

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

COVERS the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

► EXPLAINS the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

► GIVES details of design and construction of steel, timber, and concrete structures of all types.

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We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship wortby of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

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	This offer app	lies to U.	S. enly.

ROCK RATED!

MEANS RUGGED STRENGTH



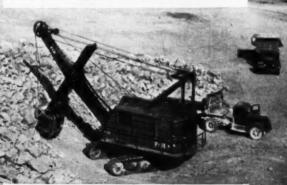
IF YOUR work calls for heavy going — in mine and quarry — here's the machine designed for it — the P&H 1055 (3½ yds.).

Here's tough, all-welded construction to take abuse in stride . . . extra stability so you can use all the power you need . . . speed and smooth operation in every function to give you maximum output.

MAGNETORQUE ELECTRIC SWING gives you faster swing, more accurate control with less strain on machine and operator. No more swing frictions with their adjustments and replacement costs.

See this real ROCK RATED shovel in action and judge for yourself.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

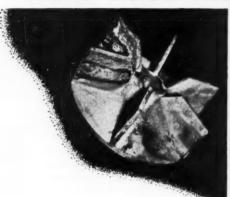








NAME YOUR HARD-FACING JOB!





WEAR-ARC

hard-facing electrodes will do it . . .

- * BETTER
- * FASTER
- * CHEAPER

Alloy Rods Co. **EXPERIENCE PROVES** that to reclaim worn equipment and parts...to hard-face against excessive wear... Wear-Arc hard-facing alloys are tops. Equipment life is increased three, four, or more times... welds last longer... resist abrasion and impact better. Use the seven basic Wear-Arc types, singly or in combination—then judge for yourself, strictly on the basis of results.

★Contact your Alloy Rods Distributor or write for Wear-Arc Bulletin 5651.

ALLOY RODS COMPANY

No Finer Electrodes Made... Anywhere

YORK, PENNSYLVANIA

AR-3

(Continued from page 154) which makes it usable in some of the heavier cages and hoists. Wheel base is 591/4 in., and turning radius only 64 in., making it an extremely versatile machine for close spaces. It has an automotive-type, dryplate clutch, and three-speed transmission is used. The final power drive acts on both rear wheels.-Kalamazoo Mfg. Co., 1827 Reed St., Kalamazoo 24F, Mich.

ALL-PURPOSE LUBRICANT-An all-purpose lubricant of the Bentone type known as Hood Multiplex lubricant is produced in grades No. 00 to No. 3 and is made with a bodying agent that gives stability under all service and storage conditions. There is no melting point, and lubricity and adhesive characteristics are retained under all normal temperature conditions. Insoluble in water, it will absorb moisture when in service without losing adhesive or lubricating qualities. Recommended for use wherever water or moisture is a problem. Tested successfully on both plain and anti-friction bearings under all temperature conditions, and recommended as a lubricant for chassis, industrial equipment of all kinds, water pumps, universal and wheel bearings.—Hood Refining Co., 599 S. Pennsylvania Ave., Greensburg, Pa.

SIX DRAFTING TOOLS IN ONE-An improved basic drafting device called the PARALINE is small enough to be carried in the pocket and differs from old models. The metal parts are now incorporated in one sturdy section, eliminating slippage. In one instrument, the Paraline provides a T-square, straightedge, tri-angle, protractor, a 32-in. scale, and paralleled rules. Engineers, students and professional men testing the Paraline have rated its performance highly, particularly for angularline layouts and cross-hatching. The pocket drafting machine measures 101/4 x 3 3/16 in., is completely selfcontained, and requires no attachments or board clamps.-Loomis In-

SEPTIC TANK CLEANER-Sea-Cal is a balanced compound of chemically and biologically active elements which quickly restores wasteclogged septic tanks of any size to normal efficient operation. Working by enzyme action, it stimulates development of digestive bacteria which attack and liquidize all clogging proteins, fats and starches. Strongly counteracts adverse effects of excessive soaps, alkalis and cleaners; is available from Chemical Research Products, 2040 15th West, Seattle 99, Wash.



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NEW EQUIPMENT BRIEFS

WALLEX is an oxyacetylene hardfacing rod with excellent abrasion resistance and good resistance to impact and corrosion. Made by Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich. It is available in three sizes: 3/16, 1/4 and 5/16 in. dia, all 8 to 12 in. long.

A new paving template has been creating a great deal of interest in paving circles throughout the West and Middlewest. Furnished in various lengths to suit a job, the Wheeler template places four pieces of tapered steel strip 2 in. deep—they can handle up to 4-in. wide strips either straight or tapered, and the guideclips are adjustable to hold strips up to 4/in. thick. Manufactured and distributed by the Wheeler Paving Accessories Co., 930 South Josephine St., Denver 9, Colo., they are said to make an absolutely straight joint which prevents irregular cracking of concrete.

Lubri-Cut is a special cooling and lubricating agent for taps, drills and cutting tools. Manufactured by the Tap and Drill E-Z Corp., 11033 Hawthorne Boulevard, Inglewood, Calif., it is available in both paste and semi-paste forms. It permits tolerances in the millionths and is equally efficient when used on hard and soft ferrous and non-ferrous metals, on plastics or on glass. Free samples are available from the company.

Concrete Glaze, a fast drying, clear varnish is recommended especially for concrete floors and other concrete surfaces subjected to wearing action of hand-trucks, heavy drums, material-handling conveyances and other traffic. Brushed or sprayed on concrete, it dries to touch within an hr, may be walked on between 3 to 4 hr, and will take heavy traffic after 24 hr. Made by Rex Home Supply Co., 142 S. Highland Ave., Ossining, N. Y.

A handy new pocket-sized stapling gun has been developed by the Heller Co., 2153-E Superior Avenue, Cleveland, Ohio. Manufacturer says it is the first one-hand stapler, capable of fastening fiber to wood.

An improvement in metal corner bead, permitting heavier thicknesses of plaster next to the bead, is announced by Inland Steel Products Co., 4157 W. Burnham St., Milwaukee, Wis. The new feature, which has been added to the firm's familiar Milcor super-Ex Corner Bead, provides for a greater depth of plaster between the bead and the wings. Also plaster grounds down to ½ in. can be specified with protection of corners against chipping and eracking.



SAFE working loads of Upson-Walton tackle blocks exceed usual safe working loads by wide margins. (See table below.) They are engineered to withstand not only the weight of the load, but hoisting strength as well. In many cases a shackle is not required.

Specify this extra strength-at no extra cost. Your Upson-Walton distributor can serve you from local stocks.

COMPARE THESE SAFE WORKING LOADS!

									Safe Working Load	Upson-Walton's Safe Working Load
3" Singl 3" Doub 3" Tripl	le								200 lbs. 300 lbs. 400 lbs.	265 lbs. 400 lbs. 540 lbs.
4" Singi 4" Doui 4" Tripl	le	٠	٠	٠			٥	٠	400 lbs. 550 lbs. 700 lbs.	510 lbs. 730 lbs. 925 lbs.
5" Singl 5" Doub 5" Tripl	ie		۰						500 lbs. 750 lbs. 1000 lbs.	675 lbs. 1000 lbs. 1325 lbs.
6" Sing 6" Doub 6" Tripl	le				* *	* *			1000 lbs. 1500 lbs. 2000 lbs.	1320 lbs. 1900 lbs. 2640 lbs.
7" Sing 7" Doub 7" Tripl	le								1500 lbs. 2000 lbs. 2500 lbs.	1700 lbs. 2575 lbs. 3000 lbs.
8" Singi 8" Doub 8" Tripl	le, .			:					1700 lbs. 2450 lbs. 3200 lbs.	2200 lbs. 2850 lbs. 3500 lbs.
10" Singi 10" Devi 10" Tripi	ie				:				2600 lbs. 3400 lbs. 4200 lbs.	2750 lbs. 3650 lbs. 4900 lbs.
12" Singi 12" Deut 12" Tripi	le						 		3000 lbs. 3750 lbs. 4500 lbs.	3000 lbs. 4600 lbs. 5400 lbs.



NOT THIS HOOK - but THIS HOOK

No Upson-Walton hoist books are formed by bending. All are drop-forged to size and shape, with substantially heavier section at critical points.



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ANCHOR CO., INC.

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the exact instrument you need from these three LOW PRICE MODELS



Finest 12" Dumpy Level available anywhere gives you more features you want, more accuracy, more durability at less money than any other instrument. It has dust and dirt-free internal focusing and has coated optics for clearer distortion-free, sharper images.



Here's the standard convertible level for the country for the past 30 years! No other instrument has the recognition and acceptance as given to the David White Carnegie Improved with complete dust and dirt-free internal focusing and coated optics for clearer, sharper, distortion-free images.



The David White "Universal" level-transit is the most practical and complete builder's instrument on the market. Now available in a new improved model — complete with internal complete with internal complete with complete with internal complete with in

Choose the exact instrument you need from these three. Compare their outstanding features, their precise, yet ongowith all others. Then you'll see why we say you'll buy "right" when you buy a David White. For complete information on any one or all three of their instruments, consult our nearest dealer — or write direct to David White Co., 343 West Court Street, Milwaukee 3, Wisconna.



We offer complete, prompt repair service or all makes of instruments levels, transits theodolites, etc A welder's goggle, featuring removable and adjustable binder-type leather side-shields is announced by American Optical Co., Southbridge, Mass. By removing the end-piece screws, these side-shields can be taken off for cleaning, sterilizing or replacing.

Pocket-size beam load selector, for those who specify or use Unistruir metal framing, quickly determines the amount of weight that can be supported by various Unistruir sections under varying conditions of span and unbraced height. The selector also accurately determines number of sections required to support a given load. One may be obtained by writing to Unistrui Products Co., 1013 W. Washington Blvd., Chicago 7, Ill.

A new rock-type tire particularly for graders operating where there is considerable rock or under other equally tough conditions is a product of B. F. Goodrich Co., Akron, Ohio. The need for this specialized tire was brought on by the growing use of special tractors, graders and motor patrols in quarries and other types of service where cutting of the casing is a particular problem. Maximum rated load on the 800 T is 6,600 lb when inflated to 50 psi.

A concrete mixer capable of mixing 168 cu ft of concrete in one batch is helping to build the new \$400,000,000 U. S. Steel Co. plant at Morrisville, Pa. It was made for the Warner Corp. of Philadelphia, Pa. by the Worthigton Pump and Machinery Corp., Harrison, N. J. It is capable of filling a 6%-cu yd Hi-up truck-mounted agitator to capacity with a single batch.

Two new air compressors, 3 and 5 hp respectively, have been released by the **DeVilbiss Co.**, of Toledo, Ohio. They augment the company's line of 7½-, 10- and 15-hp units introduced a short time ago. All of the sizes are available for either 125 or 175- psi service.

A wire rope lubricant—Texaco Crater A—has unusual penetration and adhesion properties which will permit application to wet wire rope. Made by the Texas Co., 135 E. 42nd St., New York City, it is said to remain pliable under a wide range of atmospheric conditions, and will not drip or evaporate in hot weather.

Two Dutch concerns are concentrating on production of Lilliput dredges for maintenance and improvement of ditches, canals, and ponds. With very shallow draft, they are capable of operating in ditches only 6½ ft wide and 15 in. deep—but they can attain a dredging depth of 6½ ft. Dredging capacity ranges from 353 to 706 cfb.

FOR LOW-COST TROUBLE-FREE Pumping...

you can <u>depend</u> on **NORDBERG**Diesel Pumping Units

• NORDBERG "4FS" Diesel Pumping Units are available in 1, 2 and 3-cylinder sizes, combining low cost, reliable power with efficient centrifugal pumps for practically all pumping jobs. Users report saving \$100.00 a month over gasoline powered pumps. Capacities from 200 to 3200 gpm. at 20 to 220 ft. head.

Other Nordberg "4FS" Diesels are available as "packaged" generator sets, producing from 6 to 30 kilowatts . . . and as straight power units in sizes from 10 to 45 H.P. with stub shaft or clutch power take-off drives. For full details, mail the coupon now.

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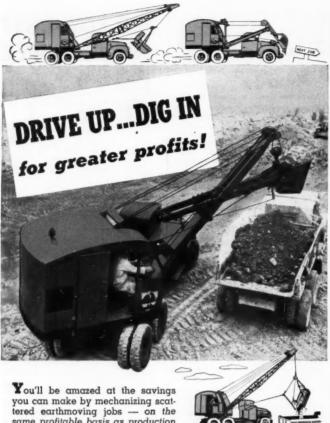
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same profitable basis as production digging — with a job-proved Schield Bantam excavator ON RUBBER.

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Goes anywhere fast - Bantam drives over paved surfaces, back roads, or cross country at full truck speeds...maneuvers in tight spots where bigger rigs can't go.

Investigate today — Join the thousands of satisfied users who are getting more jobs done at less cost with high-speed Bantams. 8 versatile attachments. Write for free literature. Schield Bantam Co., 221 Park St., Waverly, Iowa.

digs 100' ch per hr. Works to 14' depths. Ideal for sewer and water lines, rainage work, etc.

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of material per hr. for working feeding crushers, etc.

Clamshell loads up to 70 cu. yds. of loose material per hr. from stockpiles. n lifts 10,000 lbs

Cranes . Excavators Get more jobs done at less cost

A heavy-duty, vane type rotary pump has been added to the existing line of rotary pumps manufactured by Worthington Pump and Machinery Corp., Harrison, N. J. The pumps are manufactured in both internal and external bearing designs; the external bearing models being especially suited for non-lubricating liquids, such as gasoline and kerosene.

An improved formula of its Certified Rust Inhibitor No. 425 is announced by United Laboratories, Inc., Cleveland 12, Ohio. It will dry in 10 min under normal drying conditions, and one coat provides excellent hiding of old metal surfaces. It will withstand temperatures from -100 deg F to 250 deg F, and is exceptionally resistant to salt air and fumes.

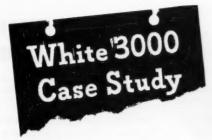
A high-output baseboard designed for residential heating use has a rating of 1100 Btu, at 215 deg F. A tilt-fin design is an exclusive feature of the new Brown Bayce Heat, Literature may be obtained from the manufacturer, Brown Products Co., Forest Hills, N. Y.

United States Radiator Corp. offers a new and safer gas-fired unit heater which is fully approved for natural, mixed, manufactured and propane gas. Five new models put out from 55,000 to 200,000 Btu. For further information write United States Radiator Corp., 300 Buhl Building, Detroit, Mich.

A combination rust inhibitive primer and finish coat which normally dries within 10 to 15 min has been announced by the Wilbur and Williams Co., 130 Lincoln St., Brighton 35, Mass. The company offers to supply a one-half pint sample, free of charge, to any industrial user who will request one on his letterhead.

An Anti-Friction Bearing Lubricant -Texaco High Temp Grease considerably extends the efficient range of operation of ball, roller and plain bearings at high temperatures. Announced by the Texas Co., 135 E. 42nd St., New York, N. Y., its water resistance makes it applicable in operations where long retention of grease and resistance to washing out are factors.





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DUMP TRUCKS must be kept on the go...with full payloads for maximum earning power under today's operating conditions.

That is how M. J. Grove Lime Company, Lime Kiln, Md., boosted its payloads 3000 pounds with the White 3000... won highest praise from drivers . . . stepped up production schedules.

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making more trips per day...carrying more payload per trip...earning more every day because this entirely new kind of truck is engineered to do more work.... in less time... at lower cost.

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Cleveland 1, Ohio

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 For belts \(\frac{3}{2}'' \) to \(\frac{1}{2}'' \) thick.
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- Strong, durable . . . pull or tension is distributed uniformly across joint.

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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

MODERN AUTOMOTIVE ENGINE OILS—is the subject of the January 1952 issue of "Lubrication." The 12-p publication is well illustrated with pictures and tables and covers oxidation, detergency, metal-surface protection, addition agents, and service characteristics of additive oils. It is available from The Texas Co., 135 E. 42nd St., New York 17, N. Y.

STANDARDIZATION OF EQUIPMENT—This booklet points out the economy of having two or more light power units on the same job is in the interchangeability of parts. The fact that some 97 manufacturers use "Cat" diesel engines in their products adds to the effectiveness of this interchangeability. The booklet is illustrated with pictures of bulldozers, scrapers, wagons and the like along with their attachments which are matched to the job and to the prime mover. Copies of the booklet (Form 30243) may be obtained from Caterpillar Tractor Co., Peoria 8, III.

PORTABLE HEAVY DUTY HOIST-ING MACHINE—Here is a 4-p folder showing how a Buck hoisting machine is towed easily with a pickup truck, unfolded like a jackknife, and erected by its own mechanism from horizontal to vertical position in 2 min 11 sec. It is able to hoist safely a full 2,000-lb load at 100 fpm. Step-by-step erection photos are included.—Buck Equipment Corp., 205 Butler St., Cincinnati, Ohio.

"BUILDING GUIDE FOR GOOD HOUSE PAINTING"—is the title of a 12-p booklet intended to assure long-lasting paint jobs on homes. Dealt with in detail are methods of preventing accumulation of excess moisture in walls—the greatest cause of paint failures.—West Coast Lumbermen's Assn., 1410 S. W. Morrison St., Portland 5. Ore.

"SEE BETTER... WORK BETTER"
—This is the title of a series of publications being published by General Electric. The first five of the series are now available. They include such items as inspection, lighting tips, proper lighting of offices and plants, lamp maintenance, installation of warning lights, grid pattern lighting, candlepower and dozens of other subjects. Available from the Lamp Division, General Electric Co., Schenectady, N. Y.



"Put it on a TALBERT TRAILER

in order to get the minimum road clearance necessary for this bridge"



This equipment was on a standard type construction trailer. In

order to provide minimum road clearance and minimum load height necessary for crossing this bridge, the load was transferred to a TALBERT LOW-



Shown here is a new TALBERT TRAILER ATTACH-MENT, the REMOVABLE THIRD AXLE.

- Fits all standard Talbert Trailers.
- Easy to attach and remove (can be quickly installed for extra heavy hauls and special moves).
- Equalized load distribution on all three axles.



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trallers and dump semi-trailers

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FLINTKOTE INDUSTRIAL PROD-UCTS DIGEST—is a 24-p pocket size, illustrated booklet briefly describing many of the standard and specialized Flintkote products. It is intended to serve as a guide to specific, as well as custom-formulated, asphalt emulsion and cutbacks, asphalt, rubber and resin adhesives, coatings and sealers.—The Flintkote Co., Industrial Products Div., 30 Rockefeller Plaza, New York 20, N.Y.

COMPOSITE CATALOG—of the Minneapolis-Honeywell Regulator Co. describes the company's instruments, control devices and related components. Specifications of approximately 100 measuring and control instruments and valves are outlined, including several new designs.—Minneapolis-Honeywell Regulator Co., Brown Instrument Div., Wayne and Windrim Avenues, Philadelphia 44, Pa.

CONCRETE MASONRY SLAG UNITS-This manual on slag block is devoted entirely to the properties of slag concrete masonry units and describes their chemical properties, physical properties and use in manufacture of masonry units. Tables are included on fire endurance and strength after fire exposure of unfilled hollow walls along with similar walls filled with different materials. Another table makes a comparison of influence of type of aggregate on thermal properties of concrete walls of different thickness and design of units. Also included are more than a dozen pictures of actual installations in churches, universities, and auditoriums. The 25 member-companies are listed with their home addresses.-National Slag Assn., 644 Warner Bldg., Washington 4. D. C.

HIGHWAY CLEANUP - Bulletin L1028 describes the use of Eimco's Model 104 in clearing highways. It explains how the sturdy, crawlermounted shovel requires only a width of 6 ft 6 in. as it digs rock, sand, gravel or debris spilled along the highway by rock slides and winter slough. Several four-color pictures are included testifying to a minimum of traffic holdup. Information is included on the machine's loader transmission, controls, main frame assembly and bucket elevator mechanism .- The Eimco Corp., Salt Lake City 10, Utah.

NON-CLOGGING SLUDGE PUMPS
—This bulletin (206.4) describes the non-clogging sludge pumps put out by Lawrence Machine and Pump Corp. The 8-p folder explains in detail the casing, impeller, shaft, packing box and bearings, of the pump; includes a table which gives dimensions, capacities and diameter of solids that the pumps will pass.—Lawrence Machine & Pump Corp., 371 Market St., Lawrence, Mass.

Reclaiming coal



Rupp Brothers, Incorporated, general contractor of Kittanning, Pennsylvania, use one of their five MICHIGAN Truck Excavators to reclaim coal for the Powell Coal Company. Coal formerly lost by diverting coal washings into rivers and streams is now pumped into settling pits and reclaimed by the mine. Rupp Brothers use this ½-yard MICHIGAN clamshell to spread the still wet coal dust over high ground for drying.

Says operator Ken Rupp: "MICHIGANS are tops with me. They're fast and easy to maintain. I especially like the air controls". States A. L. Rupp, president: "Our MICHIGANS require very, very little maintenance. They're always available so we get contracts others can't handle because their equipment is tied up for repairs".



Make your next excavator-crane a MICHIGAN . . . you, too, will be 'way ahead. Send for details.

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495 Second Street, Benton Harbor, Michigan, U.S.A.



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The original washerless hose coupling, with a reputation for safe, reliable service under hard use and rough handling. Ground joint union between stem and spud provides leakproof, trouble-free seal. All parts malleable iron or steel, rustproofed. Furnished with "Boss" Offset and Interlocking Clamps. Sizes 1/411 to 611, inclusive. Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

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ANGGLATI COMPANIS - FOREITON COMPANY INC. QUARRYILLE PA - PRECISION DRAWS STILL COMPANY CAMOIN N.

SNOW MELTING FILM-"A Winter Wonder" is the title of a new sound film available to technical and professional societies, trade associations, architectural schools and industrial groups. The 9-min presentation is the first motion picture on the subject of concealed snow-melting systems. It traces their development, telling what they are, how they are installed, and what they do. Pictures taken during 1950's "big snow" depict snow-melting systems in operation. Arrangements for obtaining the picture may be made through the offices in Atlanta, Boston, Chicago, Houston, New York, Philadelphia, St. Louis, San Francisco and Washington of the A. M. Byers Co.

PIVOTED STEEL WINDOWS—This describes the features, types, sizes and specifications of the new Steel-craft pivoted steel windows. The 4-p catalog is filled with photos, drawings and full-size, cross-section details and technical data. Pictures of spring-latch and cam-latch hardware also are included.—The Steeleraft Mfg. Co., Rossmoyne, Ohio.

"MASONITE HARDBOARDS"—is the title of a guide for the application and finishing of Masonite hardboards as they are used in building construction and remodeling. All of the more general or common applications are covered. Subjects include bending, fastening, finishing, wainscots, underlayment, exterior siding, and architectural specifications.—Masonite Corp., 111 W. Washington St., Chicago 2, III.

EMERGENCY POWER PLANTS-A catalog covering power plants for emergency use has been released by Universal. Citing storms, floods, fires, and mechanical breakdowns as causes of electrical power failure and power shortages resulting in dimouts, the catalog contains specifica-tions for emergency-standby light plants with capacities from 700 to 36,000 w. in both gasoline and diesel models, air- or water-cooled units. Practical applications are suggested for restaurants, airports, factories, homes, hospitals, theaters and other buildings.-Universal Motor Co., 413 Universal Drive, Oshkosh, Wis.



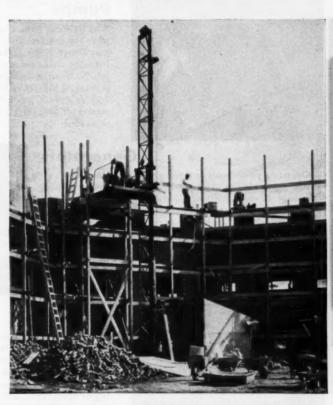
30 trips an hour

Two FULL concrete buggies up, two empties down, in two minutes? Absolutely—if you can wheel 'em on and off fast enough. And your American Portable Material Elevator will go at that speed as long as you need it.

This is one elevator that doesn't need a lot of tuning and tinkering to get it going. You take it off the truck at 8 a.m., assemble the tower on the ground, raise it by its own hoist power, and start moving material by 11 o'clock. Everything is perfectly aligned, smooth running, and safe.

The PME carries 2500 lb. loads, 90 feet per minute. Stands 46′ to 96′ high. Switches from big 6′ x 6′ platform to ½ yard automatic-dumping concrete bucket in minutes. Other extras include swing boom attachment, safety device, and transport wheels. To rent or buy, see your American Hoist distributor.





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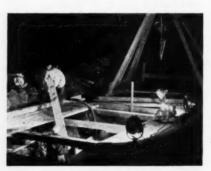




Why let water waste time . . . which is money . . . on a job, when you can get rid of it fast with a Homelite Gasoline Engine Driven Pump. Light enough for one man to carry, your Homelite can be put into operation quickly at any spot on the job. No transportation problems. No delays. With fastest self-priming, it handles up to 15,000 gallons per hour and keeps seepage down to strainer level automatically. It has a 28 foot suction lift. Non clogging. Completely dependable in all kinds of weather.

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Heavy-Duty Belt Conveyor handles aggregates, brick and packages. Designed for convenience and heavily built for rugged use, Model 608 solves loading problems—fast.



Belt Car Unloader with extra wide belt and positive drive is designed expressly for unloading all types of aggregates from cars. It is easily transported and has solid rubber belt with self-sealing edges.

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Specify Carver Contractor Pumps your best buy for better performance.

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Here's bridge-building teamwork . . . McKiernan-Terry style! On the new Housatonic Bridge connecting Derby and Shelton, Conn., four pieces of McKiernan-Terry equipment were teamed up by the contractor for fast pile driving and extracting.

McKiernan-Terry 9-B-3 and 10-B-3 Double-Acting Hammers drove 40 to 65 feet steel piles to refusal in rock for four piers and the east abutment. Piles were punched down on a 1 in 6 batter from large crane rigs.

Cofferdam steel piles, 40 feet in length, were driven by a McKiernan-Terry Double-Acting No. 7 Hammer and quickly removed with a McKiernan-Terry E-4 Pile Extractor.

You, too, can get all the pile-driving versatility you need with the wide range McKiernan-Terry line. It includes 16 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors. Write for bulletin.

A McKiernan-Terry Pile Hammer driving steel foundation piles for the Housetonic River Bridge from the 80-th boom of a truck crane. Mariani Construction Co. was the contractor.



McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
14 PARK ROW, NEW YORK 38, NEW YORK
Plants: Harrison N.J. and Dover N.J.

Methods Memo . . .

IF YOU MISSED "On-the-job Contractor-Labor Relations" on page 61, may we urge you to turn back and read that page for some mighty useful and up-to-the-minute information. Henceforth, Leon Kromer each month will serve as your guide through a phase of the construction business that has devious ways and many twists and turns. We are convinced that most contractors can benefit through his first-hand experience as a full-time specialist in labor relations strictly in the construction field.

WE ARE INDEBTED to the Chamber of Commerce of the United States for calling the attention of all citizens repeatedly to the snowballing effect of government attempts to set up a controlled economy, Here is a recent gen;

"Since the Office of Price Stabilization issued its CPR 22 (Manufacturers General Ceiling Price Regulation) last April 25, manufacturers have been trying to work with the following additions to the order: 34 amendments, 33 interpretations, 19 supplementary regulations and 24 amendments to supplementary regulations. OPS also has issued a factfinding sheet, a 12-p printed guide and several additional forms or applications, all pertaining to CPR 22."

RAPID IDENTIFICATION of the critical metals needed through scrap salvage is made possible by consulting a pocketsize booklet offered by the International Nickel Co. It lists the simple materials required and the easy tests possible to segregate various metals for more profitable and useful scrap segregation. Ask for it through INCO's Development and Research Division, Technical Service Section, New York 5, N. Y.

SYNTHETIC GRAVEL FROM MUD for use in areas where natural gravel is not available is a possibility, according to Professors Benjamin K. Hough and Julian C. Smith of Cornell University. They make synthetic gravel from mud, inexpensive chemicals and sulfite liquor-a waste product of the paper industry which is a headache to pulp producers because of difficulty in disposing of it. Mixed in a briquetting machine, the material is fused into a form resembling oversized dog biscuits. It may then be broken to simulate crushed rock. In tests, pieces have been submerged in water for six months without disintegrating. They have withstood freezing and thawing and 30ft drops. Experiments show that the binder is effective with a wide variety of soils. It is emphasized that the product probably cannot compete with natural gravel but is remarkably effective in stabilizing foundation materials. The research is sponsored by the Army Engineer Corps.

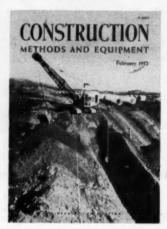
TEN YEARS OLD are the Seabees, construction battalions of the Navy that again have gained muscle since hostilities began in Korea. They date their birth from December 28, 1941, when Admiral Ben Moreell (now retired from the Navy and president of Jones & Laughlin Steel Corp.) requested authorization for three battalions. Rear Admiral J. F. Jelley, Chief of BuDocks, states, "The Seabees now are able to handle any job likely to be assigned them."

BITUMINOUS PAVEMENT will receive a full-scale test by the Western Association of State Highway Officials in southeastern Idaho. The test road will consist of two enclosed loops, each with two 1,900-ft straightaways of research pavement. Material will vary in thickness from 6 to 22 in., and the relative effects of different types of test trucks on all sections will be determined. Careful records of maintenance will be kept to help arrive at the "real cost" of each highway type. States participating are: California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, Washington and Wyom-

WHETHER YOU CONTRACTORS know it or not, you're getting into the surveying business. Many contracting agencies are now demanding that contractors run out all grades and lines from a benchmark and established centerline. While it's one more job to do, it's not so bad, for now you can get those lines and grades when you need them, without waiting. Also, you aren't troubled with the job of trying to preserve grade stakes set far in advance of your needs. Of course, you guys will have to learn the meaning of azimuth, height-of-instrument, offsets, declinations, rate-of-slope, blue tops and a lot more. And you'll have to buy transits, levels, tapes, rods and notebooks.

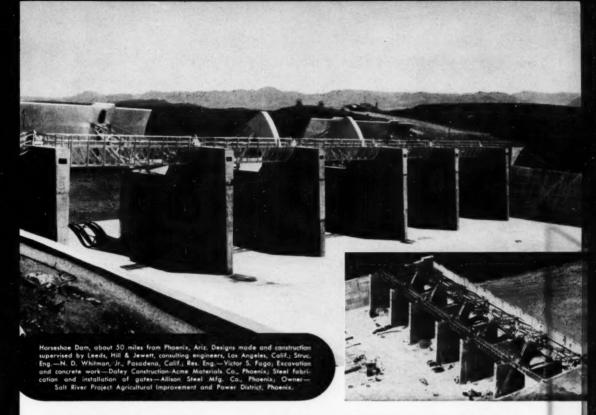
PIPELINES FOR EVERYTHING may become the rule in the future. In Ontario, the International Nickel Co. of Canada has completed a 7½-mi pipeline through which will be pumped 3,650,000 tons of nickel-copper ore annually from concentrator to reduction plant Water added to ore concentrate makes a pulp which flows through the wooden pipe at 800 gpm. Pipelines also carry tailing (waste material) to a disposal area.

HOW MUCH WILL BE LOST in the threatened steel strike is the subject of much worried discussion across the country. Production figures show that for each day of the strike there will be a loss of 15,000 tons of heavy structural steel. Nearly 10,000 tons of this (daily) will be lost to the construction industry. In addition, there will be a daily loss to construction of about 50,000 tons of carbon steel going into every phase of building. Also, a daily production of more than 5,000 tons of reinforcing bars will not be forthcoming.



On the Cover . . .

Working up a steep slope of the Sierra Madre foothills, in California, a Lima dragline is cutting the ditch for the first 10-mi section of the South Coast Conduit. American Pipe & Construction Co., Los Angeles, is contractor on this stretch of 7-ft reinforced concrete pipe for the U. S. Bureau of Reclamation. The aqueduct, part of the Bureau's Cachuma Dam water supply project, will carry water from the outlet of Tecolote tunnel, piercing the mountain range, to Santa Barbara. A 5-mi extension will serve Montecito and Carpentina.—Photo by Art Riley



POZZOLITH CONCRETE In Dam With World's Largest Radial Gates *

The increasing use of Pozzolith Concrete in noteworthy structures, like this \$900,000 reservoir enlargement project, results from the fact that Pozzolith has proved to be the most economical means of meeting concrete requirements.

Here the problem was to obtain easy placeability yet maintain designed strength, since the piers were comparatively thin sections (see small photo) and heavy with steel reinforcement. The answer was Pozzolith... because it improves workability even with total water cut as much as 15%.

Pozzolith's cement dispersing, water reducing action, plus its entrainment of the optimum amount of air, also produced these concrete properties:

- MINIMUM SHRINKAGE
 - LOW PERMEABILITY
- GREAT DURABILITY
- GOOD APPEARANCE
- HIGH BOND OF CONCRETE TO STEEL

Over 9,000,000 cubic yards of Pozzolith Concrete placed in 1951 alone testify to Pozzolith's ability to produce better concrete at lower cost. May we send you complete information and the Pozzolith booklet?

*Close fitting pre-cast bascule weights which counterbalance the gates, also 1-beam seal at bottom of gates, were precision grouted with EMBECO — another Master Builders' cement dispersion product, which produces non-shrink grout and mortar.



CLEVELAND 3, OHIO

Subsidiary of American-Marietta Company

TORONTO, ONTARIO

Only the Timken Company offers all 3 rock bit types...



and a <u>complete</u> rock bit engineering service!

If you want to get the best bit for your particular job, go to the Timken Company—the only manufacturer who makes all three types of rock bits:



MULTI-USE. Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct.



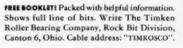
2 CARBIDE INSERT. For drilling extremely hard and abrasive ground, smaller holes, extra deep holes. Holes go down faster, bit reconditioning is minimized.



3 ONE-USE "SPIRALOCK". To use where reconditioning is not feasible—where circuit control of bits is difficult or impossible. Gives lowest unit cost of the three. "Spiralock" union holds bit on dependably, permits easy removal.

Because the Timken Company makes all 3 rock bit types and can make unbiased recommendations to meet your drilling needs, it offers the only complete rock bit engineering service. Backed by 20 years' experience in solving rock bit problems, our rock bit engineers will give you the bit performance you're after,

whether you're looking for lowest bit cost, lowest cost per foot drilled, greatest possible drilling speed, or any other desired advantage.





TIMKEN

... your best bet for the best bit...for every job